IDEAL AMUSEMENT COMPANY
ATHENS, GEORGIA

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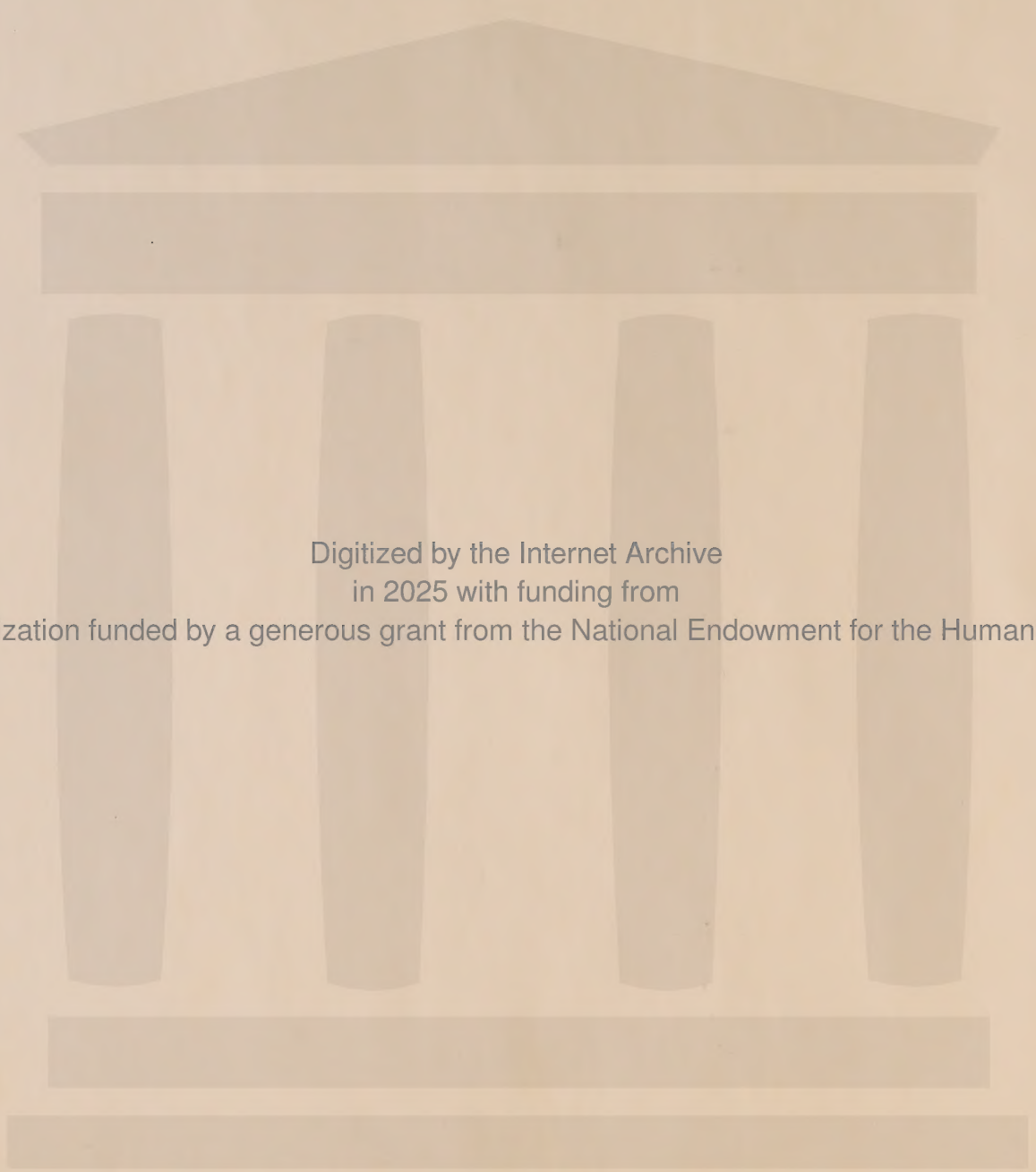

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1A GENERAL CONDITIONS:

1A-01. The AMERICAN INSTITUTE OF ARCHITECTS general conditions of the contract for the construction of buildings is included in these specifications and shall be construed as a part thereof.

END OF SECTION

1B SPECIAL CONDITIONS

1B-01. ARCHITECT: The General Conditions shall be amended as follows:

a. All mention of "Architect" shall be omitted. Contractor shall be responsible directly to the Owner.

1B-02. INSURANCE: Article II shall be amended as follows:

a. Builder's Risk insurance shall be purchased and maintained by the Contractor. Owner shall be notified 10 days prior to cancellation of policy.

1B-03. OFFICE & STORAGE FACILITIES:

a. The contractor shall provide and maintain until the completion of the contract, a temporary office building, on the premises, in which he shall provide sufficient and proper space for the execution of the contract.

1B-04. SANITARY PROVISIONS:

a. The contractor shall provide temporary sanitary toilets for the use of workmen. Toilets shall conform to requirements of the Georgia Health laws, shall be maintained in a sanitary condition during the progress of the work.

END OF SECTION

1 C ALLOWANCES

1C-01. GENERAL:

a. Cash allowances for the purchase of certain materials are specified under individual sections of the specifications. The net amounts stated shall be included as a part of the work.

1C-02. ALLOWANCES:

a.	PREFINISHED PANELING	$.30/sf
b.	Finish Hardware	$850.00
c.	Carpet	$8.00/s/y

END OF SECTION

2A EARTHWORK

2A-01. GENERAL:

a. This section includes all items in connection with clearing, grubbing, general excavation, filling, structural excavation, structural backfulling, and related items necessary to complete work shown on the drawings and specified herein.

b. Bituminous pavement and related items are included in section "BITUMINOUS PAVEMENT".

c. Excavating and backfilling for sewers, water, gas, plumbing, heating and electrical work are included in other sections of the specifications, subject to applicable requirements of this section.

2A-02. CLEARING AND GRUBBING:

a. Remove all trees, stumps, roots, brush and other vegetation within each building area shown on the drawings, which will in any way interfere with general excavation required or with the construction of the improvements.

b. Site shall be cleared of natural obstructions, existing foundations, existing pavement, existing utility lines, and other items which would interfere with performance of the contract, complying with all local utility company requirements which are applicable. (See paragraph EXCAVATION ASSUMPTIONS).

c. Resulting depressions where no further excavation is required shall be completely filled and compacted in accordance with paragraph FILLING AND BACKFILLING.

2A-03. EXCAVATION ASSUMPTIONS:

a. Cutting and filling shall be accomplished as necessary to bring the ground in the following locations to the levels indicated.

1. Concrete Slabs on Grade - to the underside of the slabs.
2. Exterior Hard Surfacing - to the underside of surfacing, including subsurface if any.
3. Areas to Receive Topsoil - to 4" below finish grades.
4. Otherwise - to finish grades shown.

b. Grades not otherwise indicated shall be uniform levels or slopes between points where elevations are given, or between such points and existing grades.

c. Abrupt changes in slope shall be rounded.

2A-04. STRUCTURAL EXCAVATION:

a. Excavate to elevations and dimensions indicated, plus sufficient space to permit erection of forms, shoring, masonry, and water-proofing; and to permit inspection of foundations.

b. Trenches for footings may be cut to accurate sizes, omitting, side forms, if the nature of the soil permits concrete to be placed in clean-cut trenches without cave-ins.

c. Bottom of footings may be as high as limiting dimensions shown on the drawings allow, if bearing value of the soil is approved by the inspector immediately prior to placing of concrete. Otherwise, excavation shall be continued until soil for bearing which the inspector will approve is encountered.

d. If suitable bearing for footings is not encountered at the levels indicated on the drawings, the Contractor shall immediately notify the Owner and shall not proceed further until instructions are given and necessary measurements made for purpose of establishing addition volume of excavation.

e. If excavations are carried below levels shown on the drawings and the Contractor wishes to keep the footings at these levels, he may backfill with 3000 psi concrete after he has excavated to approved depths.

2A-05. ROCK EXCAVATION:

a. If rock is encountered within limits of excavation, the Contractor shall immediately notify the Owner and shall not proceed further until instructions are given and measurements made for the purpose of establishing volume of rock excavation.

b. Rock is defined as any stone or boulder that cannot be removed by a power shovel, 1/2 cu. yd. bucket capacity, without use of continuous drilling or by explosives.

2A-06. USE OF EXPLOSIVES:

a. Where explosives are used, work shall be done by experienced powder-men using small charges and in strict accordance with all regulations governing this work.

b. Any damage to foundations or other completed work by the improper use of explosives shall be corrected at the contractor's expense.

2A-07. PRECAUTIONS AGAINST CAVE INS:

a. The Contractor shall take proper precautions to prevent cave-ins of all excavations.

b. The expense of repairing damage or other additional work due to excavation cave-ins that do occur shall be borne by him.

2A-08. FILL AND BACKFILL MATERIAL:

a. Fill and backfill material shall be earth free of debris, roots, and organic or frozen matter, which is proven to be satisfactory by tests preformed by an independent laboratory selected by the Owner. This laboratory must also be the one to inspect compaction of the material in place.

2A-09. BORROW PITS:

a. Pits in Borrow Areas on property if needed shall be designated by the Owner and shall be operated in a manner approved by the Owner.

2A-10. FILLING AND BACKFILLING:

a. Fill and backfill material within the building areas shown, within the area outside of this for a distance of at least 6 feet, and under exterior hard surfaced areas, shall be compacted to at least 95% of the maximum dry density obtained at optimum moisture content, as indicated by Standard Proctor Compaction Tests in accordance with requirements of ASTM Specifications D-698-58T, Method C.

b. After permanent underground installations are approved by the local authorities as required and by the Owner, backfilling shall be started. Shoring shall be removed in a manner to avoid damage or disturbance to surrounding areas.

c. Fill and backfill material shall be uniformly spread, moistened or dried to proper moisture content for required compaction, in approximately horizontal, continuous layers not thicker than 6" when light equipment is used, and not thicker than 8" when heavy equipment is used.

d. Earth on which this material is to be placed shall be firm, dry and unfrozen with minimum bearing value of 2000 psf.

2A-11. CONTROL OF DRAINAGE DURING EARTHWORK:

a. Grading around the building shall be controlled so that ground is pitched to minimize the running of water into excavated areas of the building, or damaging other structures of property.

b. All Excavated spaces shall be kept clear of water during construction.

c. During all compaction of fill, the standing of water shall be prevented.

d. Borrow pits shall be operated in such a manner that borrow area will be left self-draining at completion of work.

2A-12. DISPOSAL OF SURPLUS:

a. All cleared and grubbed debris, all earth from areas of cut not required for construction of fills, all removed rock, and all excavated material unsuitable for fill and back-fill shall be removed from the site.

b. Any burning of trash shall be in keeping with local regulations and shall in no way be hazardous to existing structures, construction activities, sorted materials, and trees and vegetation which remain. The Contractor shall be responsible for complete compliance of all applicable regulations, and shall keep the fires under constant attendance until completely extinguished.

END OF SECTION

SECTION 2B - BITUMINOUS PAVING

2B-01. PROTECTION

a. ALL-curbs, concrete, buildings, etc. shall be protected during paving operations with suitable coverings and protection. Items damaged or marred with paving materials shall be replaced at Contractor's expense.

2B-02. SUB-GRADE

a. THE SUB-GRADE, consisting of the material placed in accordance with the specifications for site grading, shall be brought to 2" below finished paving grades shown on the plans, and shall be thoroughly compacted to a minimum dry weight. per cubic foot of at least 95% of the maximum dry weight as determined by AASHO Standard Method T-99. Material from sub-grade excavation shall be used in filling depressions as required. In no case shall the finished paving grades channel water to the building.

b. PROTECT THE SUB-GRADE from damage and keep the surface of the sub-grade in such condition that it will be adequately drained at all times.

2B-03. BITUMINOUS PAVING

a. PREPARATORY WORK: Before commencing of bituminous paving all curbs and gutters, walks, and steps adjoining shall be installed; also all drainage structures and lines in and under paving shall be installed.

b. ASPHALT PAVING for parking area, drives shall consist of the following:

4" crusher run base

Bituminous prime coat

Two inch thick plant mix surface course drive and parking area mix.

c. BITUMINOUS PRIME COAT: Apply to previously prepared base a bituminous prime coat. Apply prime coat at the rate of .10 to .30 gallons per square yard. Prime coat shall be set for twenty-four (24) hours before surface coat is laid.

d. APPLY to the previously prepared base a plant mix surface course conforming to the Asphalt Institute drive and parking area recommended mix.

End of Section

SECTION 2C - SITE IMPROVEMENTS

2C-01. GENERAL

a. Work Includes concrete walks, steps, drives, curbs, and drainage structures.

b. Work specified in this section shall be coordinated carefully with overhead and underground utility work covered by other sections.

2C-02. MATERIALS

a. Concrete Materials - Refer to Division 3A - Concrete.

b. Concrete Walks, Pads, Curbs & Drives - Refer to Division 3A - Concrete.

c. Concrete pipe - Concrete culvert and storm sewer piping shall be Class 2, ASTM C76. Pipe joint shall utilize O-ring gaskets which meet ASTM - C443 for Concrete pipe.

d. Castings - Catch basin grates and frames are furnished under Division 5B - Miscellanous Metals.

2C-03. WORKMANSHIP

a. Sewer Construction -

1. Sewer pipe laying - Commence at the lowest point in the system and lay pipe with bell end upgrade. Test pipe for soundness, clean interior and joint surfaces before lowering pipe into trench.

2. Earthwork - Pipe shall be provided with a uniform bearing of undisturbed soil or controlled fill, and where rock is encountered, provide a minimum cushion of 12" of controlled fill. Backfill shall be placed carefully and tamped to 95% compaction.

END OF SECTION

SECTION 3A

3A-01. GENERAL

a. This section includes materials and all other items in connection with designing of concrete mixes and with mixing, placing, finishing, curing and testing concrete shown on the drawings and specified herein.

b. Inserts and pipe sleeves for heating, air conditioning, ventilating, plumbing and electrical work are included in other sections of the specifications.

c. The following publications shall govern, except as modified herein:

(1) ACI 315, Manual of Standard Practice for Detailing Reinforced Concrete Structures.

(2) ACI 318, Building Code Requirements for Reinforced Concrete.

(3) ACI 604, Recommended Practice for Winter Concreting.

(4) ACI 605, Recommended Practice for Hot Weather Concreting.

(5) ACI 613, Recommended Practice for Selecting Proportions for Concrete.

(6) ACI 614, Recommended Practice for Measuring, Mixing, and Placing Concrete.

(7) ACI 622, Formwork for Concrete.

3A-02. MATERIALS

a. Portland Cement shall conform to the requirements of ASTM C150, Types I and III. Type I shall have specific surface fineness (Blaine) that does not exceed 3600 sq. cm. per gram. Two copies of the laboratory test reports for each carload of cement shipped to the Concrete Producer (from the beginning to the completion of concrete work) shall be forwarded to the designated testing laboratory at the time the carload is shipped. All cement test reports shall give results of chemical and physical tests, including percents of tricalcium silicate, dicalcium silicate, tricalcium aluminate, and alkalies (Na_2O plus K_2O).

b. Course aggregate shall conform to the requirements of ASTM C33, free of harmful amounts of mica, felspar, chert or other material which tends to weaken concrete.

c. Fine aggregate shall conform to the requirements of Georgia State Highway Specifications, or ASTM C33; and from testing of at least four different representative samples, (two from the Concrete Producer's stockpile and two obtained at the source of supply), in accordance with ASTM C87, mortar-making properties shall be at least 120 per cent that of Ottawa sand. A petrographic analysis of material which meets these requirements but which has not been used on Georgia State Highway Department projects shall be submitted to the Architect for approval.

d. Air entraining Admixture shall conform to the requirements of ASTM C260.

e. Water to be used in mixing concrete shall be fresh, clean, and free from injurious amounts of alkali, organic matter, or other deleterious substances.

f. Clips for anchoring sleepers shall not be lighter than 20 gage zinc-coated steel, with provision for embedment in concrete, and for attachment to sleepers.

g. Polyethylene film used for vapor barrier beneath slabs on grade shall have a minimum thickness of 6 mills.

h. Membrane curing compound for use on concrete slabs, if preferred for curing by the Contractor, shall have no oils, greases, waxes, silicones, parafines, or chlorinated rubber, shall not interfere with adhesion of resilient floor covering, and when applied in accordance with the manufacturers instructions and tested in accordance with ASTM Designation C156, shall cause at least 90% of the water in the concrete to be retained for 7 days.

i. Premolded expansion joint insulation filler shall be asphalt-coated fiber glass.

j. Forms shall be of adequate strength suitable for finish desired.

k. Form oil and form sealer shall be each standard non-staining material free from objectionable properties.

l. Reinforcing steel shall conform to the requirements or ASTM A15.

m. Wire Mesh fabric shall conform to the requirements of ASTM A185.

n. Materials shall be handled and stored in such a way as to provide protection from all injury and from intrusion of foreign matter; and, if not so protected, shall be replaced at the Contractor's expense.

3A-03. FORMS

a. The Contractor shall construct forms which conform to shape, lines and dimensions of the members as called for in the drawings, making them substantial and sufficiently tight to prevent leakage of mortar; position shape shall be maintained by proper bracing and tying together; as approved.

b. Forms shall be removed in such a manner as to insure complete safety of the structure. In no case shall supporting shoring be removed until the members have acquired sufficient strength to support safely their weight and the load thereon.

c. Construction joints shall be located at points provided for on the drawings.

d. For other considerations in constructing, erecting and removing forms, see ACI 622.

3A-04. REINFORCING STEEL AND ACCESSORIES:

a. Detail, fabricate, and tag in compliance with ACI 315.

b. Unless other wise shown, slabs on ground shall be reinforced with 6x6x10/10 wire mesh fabric placed one inch from the top, 6-inch walls with #4 @12" each way, and 8-inch walls with #5@12" each way. For bars noted as "Continuous" use corner bars at corners, and bond anchorage by extenxion or hook at each dead end. Splices at points of maximum stress shall be avoided.

c. Reinforcing steel delivered to the job which is not immediately placed in the forms shall be placed in racks, or on other supports, at least eighteen inches above the ground.

d. Place in accordance with approved shop drawings.

e. Unless other wise shown the thickness of concrete over the reinforcement shall be as follows:

(1) Where concrete is deposited against ground without the use of forms, not less than 3 inches.

(2) Where concrete is exposed to the weather, or exposed to the ground but placed in forms, not less than 2 inch, for bars more than 5/8" diameter and 1-1/2" for bars 5/8" or less in diameter.

(3) In slabs and walls not exposed to the ground or to the weather, not less than 3/4".

(4) In beams, girders and columns not exposed to the weather, not less than 1-1/2".

(5) In all cases the thickness of concrete over the reinforcement shall be at least equal to the bar diameter.

3A-05. STRENGTH OF CONCRETE:

a. Unless otherwise indicated, concrete in place shall have minimum compressive strength at 28 days of 3000 psi on the basis of "EVALUATION OF TEST CYLINDER RESULTS" included in this section.

b. Other minimum compressive strength at 28 days shall be considered acceptable on the same basis of evaluation.

3A-06. USE OF ADMIXTURES:

a. The Air-entraining admixture shall be used as needed to produce a total of 4 to 6 percent air in mixed concrete.

3A-07. MIX DESIGN:

a. Determination of proportions of cement aggregates, admixtures, and water, for each Plant Slump to be used with each strength, shall be based on actual experience in batching concrete with identical ingredients, or on results of trial mixtures using the proposed ingredients, evaluated by an independent Testing Laboratory.

b. Aggregate Tests and concrete Mix Design sheets shall be prepared by the Laboratory for each Slump which the Contractor intends to use with each strength, giving mix formula of proposed ingredients proportioned to yield cubic yard of concrete, and shall be submitted to the Architect for approval. Each mix differing from another in any way shall be assigned a separate concrete mix number by the Architect.

c. Substitution of materials shall not be made without additional tests for quality and approval by the Architect.

d. The Architect shall not disapprove any mix design given on an Aggregate Tests and Concrete Mix Design Sheet which is shown on this sheet to produce strengths equal to or greater than those specified in Paragraph 5, unless materials and mix design requirements of this specification are violated.

e. The expense of all work required to obtain Mix designs which meet these specifications shall be borne by the Contractor.

f. For Recommended Practice for selecting proportions for concrete see ACI 613.

3A-08. MIXED CONCRETES:

a. Before ingredients for concrete are batched each day the Concrete Producer shall comply with the following requirements:

(1) Have adequate provisions for separate storage of dry

ingredients and admixtures, convenient to measuring devices.

(2) Have equipment for measuring of mixing water so located that the batch plant operator either operates this equipment himself or closely supervises some other person. In this latter case the batch plant operator shall by visual inspection verify each setting of the water measuring device before the water is used.

(3) Have written certification of approved calibration within the previous 6 months of all scales and other measuring devices.

(4) Accurately determine the percent of moisture on the surface of coarse and fine aggregates, and make corresponding adjustments to saturated surface dry quantities given in the design mix.

(5) Have a slump cone and suitable 5/8 inch round plain rod on hand for making occasional slump tests at the plant.

b. Before concrete is placed, all equipment for mixing and transporting, and the reinforcement, shall be thoroughly cleaned, forms shall be thoroughly wetted or oiled, and masonry units that will be in contact with concrete shall be well drenched with water.

c. The placing of concrete may begin after water and debris have been removed.

d. Ingredients shall be mixed in the quantities given on the applicable Aggregate Tests and Concrete Mix Design Sheet, except that adjustments shall be made for the amount of moisture present on the surface of coarse and fine aggregates.

Any proposed change of a material listed shall be approved by the Architect before this change is made to a design mix, including brand of cement and graduation of aggregate changes.

e. The applicable design mix shall be the numbered approved mix which the Contractor request the Concrete Producer to deliver. The Contractor shall be responsible for selecting the mix which will give him concrete within the slump range he requires at placing time, provided that the concrete meets the Plant Slump requirements and that loss of slump between the Plant and the job for a particular mix is normal for the particular length of haul involved.

f. Mixing of the concrete shall continue until there is a uniform distribution of the materials, and shall be discharged completely before the mixer is recharged.

g. Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of materials.

h. After once started in each separately formed area, concreting shall be carried on as a continuous operation.

i. In no case shall water alone be added to the concrete after being batched; but, if a truck-mixer arrives at the job site with concrete below the lower limit of the slump range which the Contractor requires at placing time (considered by him to be unworkable), the concrete may be made workable to the use of a cement paste added in accordance with previously determined instructions mutually agreed upon by the Concrete Producer and the Contractor. A slump test shall be made and a set of acceptance cylinders shall be moulded for all retempered concrete, separate from the regular testing required.

j. For each truck-mixer delivery of concrete the Ready-Mix Concrete Company shall furnish a delivery ticket giving the truck-mixer number, the Concrete Mix number, and other pertinent information.

k. During placing, concrete shall be properly compacted in such manner that it is thoroughly worked around reinforcement and embedded fixtures; and worked into all corners of the forms.

l. The Contractor shall keep a log with entries for each truck-mixer which delivers concrete to the job, with the information included:

(1) Date
(2) Truck-Mixer Number
(3) Delivery Ticket Number
(4) Concrete Mix Number
(5) Number of Revolutions indicated on counter connected to drum of Truck Mixer, immediately before placing of concrete.
(6) Time shown on Delivery Ticket in hours and minutes.
(7) Time of Truck-Mixer arriving at the job.
(8) Time of first discharging concrete from Truck-Mixer.
(9) Time of Truck-Mixer leaving the job.
(10) Air temperature during placing of concrete.
(11) Temperature of concrete immediately after being discharged from Truck-Mixer.
(12) Slump of concrete at time of placing (when tested).

m. For other considerations concerning quality control and proper placing of mixed concrete see ASTM C94 and ACI 614.

3A-09. MOULDING AND INITIAL HANDLING OF TEST CYLINDERS:

a. The Contractor shall designate an employee who, alone, shall perform all operations of sampling concrete in accordance with instructions and demonstrations given by a representative of an independent testing laboratory selected by the Architect. A list of all instructions for this employee's use shall be put in writing.

b. The Contractor shall provide suitable storage for the cylinders during the first 24 hours after moulding, and all other equipment required.

c. A set of 3 acceptance cylinders shall comprise a single test. A test shall be made for each day's placing of each numbered mix and, if more than 100 cubic yards in the same slump range are placed in one day, there shall be additional sets for each additional 100 cubic yards or fraction thereof.

d. Each set of acceptance cylinders shipped to the Testing Laboratory shall be accompanied by the Contractor's report giving Concrete mix number, description, location in the structure, time and date of moulding, air and concrete temperatures at time of moulding, actual slump, and other pertinent information. This report shall be signed by the Contractor or his superintendent, certifying that the test cylinders have been made by one designated and in accordance with the written instructions.

3A-10. LABORATORY INSPECTION:

a. Engineering services of an independent testing laboratory selected by the Owner shall be used for all acceptance testing of in-place concrete following receipt of test cylinders which have been moulded and handled, and on which reports have been made, in accordance with the previous paragraphs.

b. One test cylinder from each set of three shall be broken at 7 days, one at 28 days, in accordance with all applicable requirements of ASTM Standards. The third cylinder shall be held in reserve and tested if one of the first two cylinders fail. Reports shall be made and 3 copies shall be submitted to the Contractor and one copy to concrete supplier.

c. Payments for all testing laboratory services shall be made by the Contractor.

3A-11. EVALUATION OF TEST CYLINDER RESULTS:

a. Concrete in place will be deemed satisfactory, if 28 day results from testing of the representative acceptance cylinders, (moulded, handled and tested in accordance with all aplicable requirements of ASTM Standards) meet the following requirements.
(1) The average of all tests shall be equal to or greater than the design strength.
(2) No one test shall be less than 70 percent of the design strength.
(3) The average of any three consecutive tests shall not be less than 93 percent of the design strength.

3A-12. QUESTIONABLE CONCRETE:

a. Failure of average 28 day test results in meeting the requirements of the previous paragraph shall be reason for that portion of the concrete in-place represented by the tell-tale test cylinders to be core tested in accordance with the requirements of ASTM C42, "Methods of Securing, Preparing, and Testing Specimens from Hardened Concrete for Compressive and Flextural Strength", if feasible; unless the Contractor can provide the Owner with satisfactory proof that results of the acceptance test cylinders in question were below the requirements of the previous paragraph because the requirements of ASTM C31 "Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Field" or the requirements of ACI 214 "Recommended Practice for Evaluation of Compression Test Results of Field Concrete", or other acceptable standards were not followed closely enough, or satisfactory proof that all structural members involved, when subjected to full design loading, would not provide stresses in the concrete greater than those allowed for a design compressive strength equal to the 28 day average compressive strength reported by the Laboratory.

b. If core tests as required fail to prove to the Owner that the concrete is satisfactory, or if the securing of core specimens is not feasible, load tests shall be made and evaluated in accordance with Sections 202 and 203 of ACI 318.

c. Apparent damage of any structural member as a result of constructionloading in excess of that for which it was designed (or in excess of the recognized lesser amount of loading which the member could have safely supported at the time of overload in the case of concrete which had not attained its desing strength by that time) shall be reason for that member to be load tested and for the results to be evaluated in accordance with Sections 202 and 203 of ACI 318.

d. All concrete subjected to load testing which does not meet the "Criteria of Acceptability" in ACI 318 shall be removed and properly replaced at no cost to the Owner.

e. The Contractor shall give close personal supervision to every phase of testing under this paragraph. In order to satisfy everyone concerned that the most accurate results possible were obtained during the investigation.

f. The cost of all testing under this paragraph in connection with concrete which does not meet the ACI "Criteria of Acceptability" shall be borne by the Contractor.

3A-13. COLD WEATHER CONCRETING:

a. Sufficient protection shall be provided to prevent freezing of any concrete until it attains two-thirds of its design strength, otherwise concrete shall not be placed when the danger of freezing exists. Concrete shall not be placed when air temperatures are 35 degrees F and falling.

b. If the Contractor chooses to allow concrete placed in Cold weather to cure without the use of insulated forms or of housing with artificial heat necessary for normal curing, he shall have at least three additional test cylinders made (each time a set of acceptance cylinders is made), and broken at his expense.

c. For other considerations concerning Cold Weather Concreting see ACI 604.

3A-14. HOT WEATHER CONCRETING:

a. In hot weather the concrete to be used shall be approved by the Architect for the particular temperature and other weather conditions involved.

b. Every effort shall be made during placing, finishing and curing to keep the concrete as cool as practical (not exceeding 90 degrees F.), allowing it to set and harden under temperature conditions which are reasonably unfirm, and under moisture conditions which will minimize drying.

c. In no case shall the temperature of fresh concrete exceed 95 degrees F.

d. For further considerations concerning Hot Weather Concreting see ACI 605.

3A-15. PLACING FLOOR SLABS ON GRADE:

a. Polyethylene film shall provide an unbroken vapor barrier between earth and concrete, with all punctures fully sealed.

b. During placing, shavels full of concrete shall be dropped on about four foot centers each way ahead of the bulk of the concrete being placed in order to position the wire mesh within the top two inches of the slab. This means that pipes, conducts, runways, etc. must be so installed that the raising of the wire mesh off the ground will not be hindered.

c. Insulation recesses and expansion joints shall be as detailed on the drawings.

d. The location of other construction joints shall be discussed with the Architect prior to placing concrete, and shall be subject to his approval.

3A-16. DEFECTIVE WORK:

a. Minor defective work, consisting of surface defects which are less than 3/4 inches deep which can be repaired by patchings, shall be patched immediately after removal of forms.

b. Any defective work worse than this, which, in the opinion of the Architect may be repaired by pressure concreting, shall be repaired by an experienced applicator who shall guarantee his work in writing to be equal to adjoining surface without defects.

c. Major defective work shall consist of any concrete work under this Section, which, in the opinion of the Architect cannot be satisfactorily corrected, and must therefore be replaced in accordance with plans and specifications.

d. Curing of corrective work shall be in keeping with applicable parts of the Section.

e. Expense of all corrective work shall be borne by the Contractor.

3A-17. FINISHING OF SLABS OTHER THAN WALKS:

a. Strike off the concrete at levels shown on the drawings by means of previously set screeds, leveling with the screed boards and a bull float as needed. (This portion of the work shall be referred to as "initial screeding").

b. For slabs to receive resilient floor covering, an open wire mesh tamp must be used to force aggregate away from the surface. Then after the shiny film of water on the surface has disappeared, work with a hand wood float, or a trowelling machine equipped with steel float blades, in an manner which will further compact the concrete, and will produce, without the use of cement or any other material dusted on, a flat surface free from depressions, humps and ridges. Finally, work with steel trowelling tools, until a smooth, slick, flat, dense surface is obtained, using a swirling motion.

c. Float finish shall be accomplished by working with a wood float, after the initial screeding, until the surface is level and reasonably hard, with no coarse aggregate visible while the concrete is still green, but sufficiently hardened to bear man's weight without deep imprint. Sufficient pressure shall be used on the float to bring moisture to the surface.

d. Single steel trowel finish shall be obtained following Float Finish and disappearance of all surface moisture, by Steel trowelling to a smooth, even, improvious finish free from trowel marks, until the entire surface is hard enough to produce a ringing sound under the trowel.

e. Double steel trowel finish (for all exposed slabs except walks) should be accomplished by continuing the Single Steel Trowel Finish with a second steel trowelling until a burnished finish is obtained.

3A-18. CONCRETE WALKS:

a. Concrete walks shall be of one course construction, four inches thick. All walks shall have a crown or cross slope of 1/4 inch per foot.

b. Forms for walks shall be standard metal sidewalk forms or 2-inch thick lumber, rigidly held by stakes or braces. Divide walks into separate rectangular sections not greater than 6 feet on any side by means of 1/8 inch steel plates of same width as thickness of walk.

c. Provide 1/2 inch expansion joints, with premoulded filler, not more than 30 feet apart and at junctions of walks with building or other fixed structures.

d. Tamp and screed concrete true to grade and section, bring sufficient mortar to surface for finishing and give wood float finish before concrete sets. Round all edges, including those at expansion joints and division strips.

3A-19. OTHER FINISHING OF POURED IN PLACE CONCRETE:

a. Concrete surfaces exposed to view other than tops of slabs, immediately after forms are removed shall have fin and other projections removed, and tie holes filled with grout containing white and gray cement in equal proportions and smoothed over, followed by patching and repairing as necessary. (This is the extent of finish required for interior exposed surfaces.)

b. Exterior concrete surfaces other than tops of slabs shall then be rubbed with cork float and carborundum stone, being smooth, rubbed finish with uniform texture and color.

3A-20. CURING:

a. Concrete shall be protected against loss of moisture, rapid temperature changes, mechanical injury, or injury from rain or flowing water for a period of 7 days when normal Portland cement has been used or 3 days when high-early-strength Portland cement has been used, in accordance with requirements of ACI-6"4 and ACI-6"5 and as specified herein.

b. Curing may be accomplished by any of the following methods:

(1) Moist Curing: Surfaces shall be kept continuously wet by covering with burlap mats or sand, thoroughly saturated with water and covering kept wet by spraying or hosing. Place materials to provide complete surface coverage and lap all joints minimum 3 inches.

(2) Impervious-sheeting Curing: Surfaces shall be thoroughly weted with a fine spray of water and then covered with waterproof paper, polyethylene sheeting or polyethylene-costed waterproof paper. Edges and ends of sheeting shall be overlapped not less than 4 inches and securely cemented or taped to form a continuous cover. Sheeting shall be weighted down to prevent displacement and shall be repaired or replaced if torn or otherwise damaged during curing period.

(3) Liquid membrane Compound: Immediately following removal of forms, loose materials and debris shall be removed from surfaces, the surfaces throughly moistened with a light spray of water, and expansion joints and other joint openings covered to prevent compound from entering. Compound shall be applied on damp surfaces as soon as moisture film has disappeared. Power spraying equipment shall be used. Material shall be applied in a two-coat, continuous operation at a coverage of not more than 200 square feet per gallon for each coat. Second coat shall be applied in a direction at right angles to application direction of first coat. Compound shall provide a uniform, continuous, adherent film that shall not check, crack, or peel, and shall be free from pinholes or other imperfections. Surfaces subjected to heavy rainfall within 3 hours after compound has been applied or surfaces damaged by subsequent construction operations within curing period shall be resprayed at specified rate. Coated surfaces shall be kept free of foot and vehicular traffic and other sources of abrasion during curing period.

END OF SECTION

SECTION 4A

4A-01. GENERAL:

a. This Section covers all unit masonry of clay or concrete.

4A-02. SAMPLES:

a. Samples of all masonry units shall be submitted to the Architect for approval before any are purchased. After the samples have approved, one complete set will be marked and sent to the Architect's representative on the job. This approved set of samples will be used as a standard and any units received on the job that do not match the samples, in size, color, texture, or quality will be rejected, and shall be removed from the job immediately.

4A-03. SAMPLE PANELS:

a. Before any masonry walls are laid, sample panels, 6'-0" long, 4'-0" high, and the actual thickness of walls to be built, shall be laid to illustrate the bond, coursing, and jointing of facing materials, and shall be relaid, if necessary, until the desired effect is obtained. Work of laying facing materials shall not start until the Architect has approved the sample panels.

b. Sample panels shall be laid of each type of masonry construction.

4A-04. HANDLING AND STORING MATERIALS:

a. All brick which will be exposed in the finished building shall be unloaded and stacked with hacks, and under no circumstances shall they be dumped from trucks, wheelbarrows, or other conveyances.

b. Full protection from the weather and from contact with the ground shall be given to all materials subject to stain. Cardboard or straw packing materials shall not be allowed to become wet. In any case, materials with stained faces shall not be laid in the walls, unless it has been demonstrated that the stains are of a character to be readily removable for normal cleaning operation.

4A-05. DIMENSIONS:

a. Before any work is started, the actual thickness of walls that the purchased brick and tile will lay, and the actual height of vertical coursing to produce the best bonding relation of facing and back-up, shall be determined accurately and reported in writing to the Architect. Any adjustments in steel work, concrete work, door frames and sills, and other fabricated parts of the building, necessary to fit the wall thickness and coursing laid by the purchased brick and tile, shall be made without added expense to the Owner.

4A-06. COMMON BRICK:

a. Common brick shall be 100% all hard dark red common brick burned from clayand/or shale, meeting all requirements of ASTM Standard C62-50, grade SW for all locations exposed to the weather, and grade MW elsewhere.

b. Where these brick are to be exposed on the exterior or interior of the building when finished, they shall be selected to eliminate chipped, cracked, soft, over-burned, or badly warped brick.

4A-07. FACING BRICK:

a. Standard Face Brick shall conform to ASTM specification C216-57, Grade SW, type FBS.

b. Utility Face Brick shall be 3 5/8"x3 5/8"x11 5/8" conforming to ASTM C216.

4A-08. CONCRETE MASONRY UNITS:

a. Concrete masonry units for back-up of exterior brick work, shall conform to all requirements of ASTM Standard C90-52 for Grade A.

b. Units for use on interior partitions shall conform to requirements of ASTM Standard C129-52.

c. Each unit shall be true and straight and of such nature as will lay a true, plumb and sound wall of the thickness indicated. Units shall have smooth faces where exposed. All Special shapes required for starters, jambs, corners, lintels, etc., shall be provided. Moisture content, at time of laying, shall not exceed 30%.

d. Cement brick for blocking, and adjusting coursing, in concrete block shall conform to all requirements for Grade A under ASTM Standard C55-55.

4A-09. MORTAR MATERIALS:

a. All Portland cement shall be of an American brand conforming to the requirements of ASTM designation C150-56, for Type I, shipped in bags of one cubic foot capacity.

b. Slag cement shall be equal to "Magnolia" as manufactured by Southern Cement Company.

c. Lime for masonry work shall be pulverized or pebble quick lime, conforming to the requirements of ASTM designation C5-26.

d. Quicklime shall be slowly slaked in a box on the job by the addition of small quantities of water until a thick paste is obtained. This paste shall be allowed to soak at least 7 days before use.

e. Sand for masonry mortar shall conform to all requirements of ASTM designation C144-52T. Laboratory reports showing compliance shall be submitted to the Architect for approval before sand is purchased.

4A-10. MORTAR:

a. All mortar shall be proportioned by methods that will insure accurate proportioning of all ingredients and shall be mixed until the entire batch is homogeneous and of proper consistency.

b. All mortar shall be used so that it will be in place before initial setting of its cement content has taken place. Retempering of mortar in which setting has started will not be permitted.

c. Mortar for all masonry, except as specified below shall be composed of 1 part slag cement, 1 part lime putty, and 6 parts sand.

4A-11. BOND, COURSING, AND ALIGNMENT:

a. Except where other pattern is noted or detailed, all facing brick shall be laid in Running Bond.

b. Except where other pattern is detailed, all concrete block shall be laid in running bond, with uniform 3/8" joints, both horizontally and vertically. Where stacked bond is indicated masonry shall be reinforced as shown.

4A-12. START OF FACING MATERIALS:

a. Where masonry facing materials are shown starting at grade, the start shall be made at least 4" below grade, from supporting shelves of foundation structure, properly related to coursing of facing material.

4A-13. CUTTING MASONRY UNITS:

a. Special care shall be given to cutting masonry units where any of the cut edges will be exposed in the finished wall and all work shall be neatly executed.

4A-14. WETTING MASONRY UNITS:

a. All masonry units, except concrete block, shall be thoroughly wet before laying in warm weather and left dry in cold weather. Concrete block shall be kept and left dry under any and all circumstances.

4A-15. FULLNESS OF JOINTS:

a. All brick work shall be laid with full shoved joints, and all joints in the brick shall be well and thoroughly filled with mortar, before another course is laid, and the joints pushed solid leaving no empty spaces whatever in the walls. Special care shall be taken to see that this is done. Any portions of wall, where voids are discovered shall be taken down immediately and relaid in a proper manner.

b. Hollow materials shall have all face webs or shells solidly bedded in mortar, but the voids in such units shall not be filled with mortar.

4A-16. DRAINAGE WICKS:

a. Wicks made from cotton clothes lines shall be installed on not over 3'-0" centers, over all concrete foundation walls, all lintel or shelf angles and all through-wall flashings.

b. After the walls are complete the wicks shall be neatly cut off flush with the outside face.

4A-17. MASONRY BONDING AND ANCHORAGE:

a. Ties of metal shall be installed at every third brick course, or equivalent intervals in larger masonry units. Ties shall be zinc coated and shall be a minimum of No. 9 gauge wires or No. 16 gauge straps.

b. Similar bonding shall be effected at all junctures of partitions with exterior walls or with each other.

4A-18. OTHER MATERIALS OCCURRING IN MASONRY:

a. Where bucks or frames at openings miscellaneous metal parts, adjustable anchors, nailers, sleeves or any materials of other trades are built into masonry work, all voids around such parts shall be solidly slushed with mortar and the whole made tight. Spacing and alignment of built in parts shall be accurate and care shall be exercised in building masonry not to displace other materials from proper position. Bond shall be spaced at openings to finish without use of bats.

b. Flashing materials occuring in masonry shall be built into walls as work progresses. Fabrication of such materials is specified under ROOFING AND SHEET METAL. Vertical positioning of through-wall flashing in relation to roof surfaces, and laps of its end joints and "step joints", are specified in the same section. These requirements shall be rigidly observed in the placing of flashings.

4A-19. FITTING AND CUTTING:

a. All cutting, fitting, and drilling required for other trades shall be done in a manner that will not damage or mar the appearance of adjoining masonry. Approval of the Architect shall be obtained before any cutting is done in locations where the strength or appearance of the structure might be impaired.

4A-20. PROTECTION OF WORK:

a. No masonry work shall be laid in weather which is 35 degrees F. or below (or which treatens to become so within 24 hours), unless approved methods are in use, for heating, or otherwise protecting newly placed work. Any damage to the work, resulting from cold or freezing weather shall be made good by the Contractor.

b. When masonry work has been stopped for the day, the exterior course and back-up shall be leveled up and the joints well filled with mortar, so as not to leave any voids in which water can collect.

c. Necessary materials to cover the walls when work is not in progress shall be provided, and tarpaulins shall be placed over freshly laid work in exposed locations, for the duration of rainy or freezing weather.

d. Nail holes shall be carefully pointed before each succeeding lift in scaffolding.

4A-21. TOOLING OF JOINTS:

a. All joints of face brick work shall be raked 3/8" back from face of face brick.

b. All joints of brick work exposed inside and all concrete block, shall be tooled to a slightly concave smooth profile.

c. Mortar shall be smoothed and compressed against the sides of joints, before final set, by use of rounded or square tools exactly fitting the width of joints.

d. Joints of other exposed masonry shall be struck flush with the surface of masonry. Flush joints shall be completely full and free of cracks or voids, providing a surface suitable for painting.

4A-22. CLEANING WALLS:

a. After the walls are completed, all exposed brick work except as otherwise specified shall be thoroughly washed down with a cleaning solution specifically manufactured for the purpose and shall be used in accordance with manufacturer's directions.

b. Muriatic acid solutions shall not be stronger than one volume of commercial acid to nine volumes of water. Brick shall be drenched with clean water before applying solution and, after cleaning, rinsed with clean water to remove all traces of solution. Materials adjacent to brick work shall be protected from contact with cleaning solution.

c. If one washing will not remove all discolorations, the operation shall be repeated until the desired result is obtained.

4A-23. CAVITY WALLS:

a. Cavity walls shall be built with a clear cavity, of width indicated on the drawings, bridged by ties formed to a "Z" shape of No. 4 gauge wire of copper coated steel or commercial bronze, and crimped to provide a moisture drip at the center of the cavity.

4A-24. PIPE SPACES AND VENT SHAFTS:

a. Walls around pipe spaces and vent shafts shall be built from the floor line to the slab above, and shall be carried up tight against the bottom of the slab. Care shall be exercised in building these walls so that the inside face shall be reasonably smooth with all holes and joints between the tile units and around piping, neatly and smoothly pointed up so that they will be ratproof. All spaces used as vent shafts shall extend to underside of slabs above, unless otherwise noted.

4A-25. CONCRETE MASONRY REINFORCEMENT:

a. Horizontal joint reinforcement shall be full welded, factory formed into flat units averaging 10 and 12 feet in length. Longitudinal wires shall be no lighter than 8 gauge. Cross wires shall be 12 gauge. Wire shall meet requirements of ASTM A82 for tensile strength. Corners shall be factory formed, or formed on the job by one cut in the internal longitudinal rod and one cut in the cross wire, and bending to shape. Lapping of corners will not be acceptable. Cross wire spacing shall not exceed 16"o.c. Center to center of longitudinal wires shall allow for positioning in center of face shell mortar bed.

b. Place concrete masonry reinforcement in every second horizontal joint.

END OF SECTION

5A STRUCTURAL STEEL:

5A-01 GENERAL:

a. Scope: Work under this section includes all labor, materials, equipment and services required to furnish and erect all structural steel and related items, shown on the Drawings.

b. Applicable Standards: For structural steel, the "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" of the American Institute of Steel Construction, adopted April 17, 1963 (hereafter referred to as AISC Specifications), shall govern if not otherwise shown on the Drawings or in these Specifications.

5A-02 MATERIALS:

a. Structural steel, unless otherwise noted, shall conform to the requirements of "Structural Steel", ASTM A36-62T.

5A-02 Materials;

b. Bolts, nuts and washers shall conform to requirements of ASTM Specification A325. Nuts shall be heavy semi-finished hex nuts or finished hex nuts conforming to ASTM Specification A194, Grade 2H,

c. Paint for structural steel work shall be an oil base metal primer pigmented with red lead and red oxide, equal to that manufactured by the Pittsburgh Plate Glass Company, the Rust-Oleum Corporation, the Themac Company, or Southern Coatings and Chemical Company.

d. Grout: Ready to use, requiring only addition of sand and water; Embeco, Master Builders's Company, Cleveland, Ohio; "Kemox C" by Sika; "Ferrolith G", by Sonneborn.

5A-03 Fabrication, Workmanship and Erection:

a. Connections:

1. Connections for structural steel work shall be done in accordance with AISC Specifications, Section 1.15, Connections, except where otherwise restricted by this Specification.

2. No shop splice, or shop or field or other connection, welded or otherwise, shall be made without having been detailed on Shop Drawings.

3. All column anchor bolts shall be furnished hereunder in accordance with approved shop and setting Drawings and shall be shipped in advance of the fabricated steel in time for setting in time for setting in the supporting elements.

b. Shop Drawings:

1. Shop Drawings shall show all beams, columns, girders, trusses, lintels or other structural members as shown or required by the Drawings, together with all connection angles and plates, bearing plates, anchor bolts, connection bolts, rivets and welds, shims, spacers or other related items required for the complete structural work.

2. Shop Drawings shall give complete information necessary for the fabrication of the component parts of the structure, including location, type and size of all anchor bolts, rivets, bolts and welds, and shall be prepared in advance of the actual fabrications.

c. Fabrication:

1. Structural steel shall be fabricated in accordance with AISC Specifications, Section 1.23 Fabrication.

2. Open holes shall be provided as necessary for connections of other work under the general contract.

d. Shop Painting:

1. Structural steel shall be given one coat of shop paint after fabrication.

2. No shop paint (or field paint) is required on items to be encased in concrete.

e. Erection, General:

1. Workmanship: Shall be equal to the best practice in modern structural steel work and conform to the requirements of AISC. All welders employed in the execution of this work shall have been previously qualified by test in accordance with the Standard Qualification Procedure of AWS.

2. Connections made in the shop shall be welded as indicated or implied on the contract drawings. Connections made in the field shall be bolted or welded as indicated on the contract drawings. All members shall be free from twist, kinks, buckles, or open joints. Parts shall be in close contact for riveted or bolted connections except where separators are required. All members shall come together without shimming. Erection holes shall not be burned or enlarged with a torch. Any shop paint on surfaces adjacent to joints to be field welded shall be wire brushed to reduce the paint to a minimum.

5A-03 Fabrication, Workmanship and Erection: continued

Erection, General: Continued-

3. Erection:

a. Structural Steel shall be erected in such a manner and at such times as to cooperate wtth other trades to expedite construction. Before starting to erect the steel, the contractor shall check the anchor bolts for alignment and levels.

b. The frame of steel skeleton buildings shall be erected true and plumb and temporary bracing shall be installed to take care of all loads to which the structure may be subjected, including equipment and the operation of same. Such bracing shall be left in place as long as may be required for safety.

4. Bearing on masonry for loose angle lintels shall be a minimum of 8 inches for any opening. Structural steel beams shall extend 12 inches past the face of masonry walls, where possible or practicable, but in no case shall the extension be less than 8 inches. This shall also apply to lintels spanning openings greater than 8 feet.

5. Grout beneath bearing plates shall be premixed material specified. Water added to mix shall be the least required to place the mixture. Grout shall be packed under the bearing to eliminate all voids.

END OF SECTION

SECTION 5B - MISCELLANEOUS METALS

5B-01. GENERAL:

a. Miscellaneous metal items shall include anchors, fastenings, hardware and accessories.

5B-02. MATERIALS:

a. Materials shall meet requirements of listed Federal Specifications, ASTM Designations and Standards and requirements specified herein:

Steel: QQ-S--741a, type I or typeII as best suited for the purpose, Class 1.

Wrought Iron: QQ-I-86b, Grade B.

Cast Iron: QQ-I-652a, class best suited for the purpose, excepting castings for cover and frames ASTM A48, Class 30.

Malleable Iron Castings: QQ-I-666c, grade best suited for the purpose.

Wire, steel, cold-drawn: QQ-W-461 composition 1020, 1035, or 1045, finisn 1 or 4 as best suited for the purpose.

Aluminum: Castings - QQ-A-601b, class 3M, condition T6.
Extrusions - QQ-A-270a, temper T4 or T6 as required; QQ-A-274, temper T5 or T6 as best suited for the purpose.
Rolled or Drawn - QQ-A-325b, temper T4 or T6 as best suited for the purpose.
Plate and Sheet - QQ-A-327b, temper T4 or T6 as best suited for the purpose.
Fastenings - Alloys shall meet requirements of:
QQ-A-267a, temper T4
QQ-A-268a, temper T4
ASTM Designation B316, temper H13, for rivets,
Stainless steel class 305 for screws.

Safety Treads, Metallic: RR-T-661, type and class best suited for the purpose.

Gratings, Steel Floor: RR-G-661a, type I or type II.

Iron and Steel, zinc coated: QQ-S-775a, type I, Class C or D, as best suited for the purpose.

Brass Plate, Sheet: QQ-B-613a, Composition 1.

Pipe and Pipe Fittings, Soil, Cast-iron: WW-P-0040la.

Pipe Steel: WW-P-406a, weight A, Class 2.

Pipe Fittings, malleable iron: WW-P-521d, Type I.

Caulking Lead: QQ-L-156.

Joint Packing: HH-P-117 or HH-P-119

Bolts, Nuts, Studs and Tap-rivets: FF-B-571a.

Bolts, hexagon and square: FF-B-575b

Machine Screws and Bolts: FF-B-584a

Toggle Bolts: FF-B-588

Screening, wire, insect: RR-S-141a

Hardware: Padlocks, FF-P-101c, locks and trim, FF-H-106a, Miscellaneous, FF-H-111b, hinges, FF-H-116c.

Paint: Red Lead Base, Ready-mixed: TT-P-0086b, Type II.
Iron Oxide, Ready-mixed: TT-P-31b.
Zinc yellow-iron oxide base, ready-mixed: TT-P-57, Type I.

5B-03. SHOP DRAWINGS:

a. Drawings shall be submitted for approval, prior to fabrication, and shall include sizes, details of fabrication, methods of assembling, connections to supporting construction and location of hardware.

5B-04. SHOP PAINTING:

a. Ferrous metal shall be thoroughly cleaned and; except items to be encased in concrete, given a priming coat of paint. Surfaces shall be thoroughly covered and shall be free of runs or sags.

b. Manufacturer's standard shop coat will be accepted for items subject to foot or vehicle traffic and such items as clean-out doors and frames, wall vents, vent grilles, scuppers and pipe sleeves, except that bituminous coatings shall not be used for items to be finished with decorator paints.

5B-05. FIELD PAINTING:

a. Items which support masonry or will be concealed in the finished work, except items encased in concrete, shall be field painted before erection of enclosing construction. Where shop coat is abraded or burned out by welding, the protection shall be touched up before field painting, Field coat shall be the same paint used for shop coat, except tinted to a different shade.

5B-06. WORKMANSHIP:

a. Metal shall be clean and free from mill scale, flake rust and rust pitting. Permanent connections shall be welded or riveted. Weld and rivets shall be finished flush and smooth where exposed.

b. Welding shall be in accordance with the Standard Code for Arc and Gas Welding, of the American Welding Society.

c. Exposed surfaces of castings, excepting non-slip, shall be finished smooth.

d. Holes for bolts and screws shall be drilled, or punched. No new holes for bolts or rivets shall be made, no enlargement of holes shall be done without approval of the Construction Engineer. Fastenings shall be concealed where possible. Exposed edges shall be milled smooth. Joints exposed to weather shall be formed to exclude water. Countersinks shall be provided to receive hardware. Plates for mounting hardware shall be bolted, riveted or welded in place, except that bolts shall not be used for detention items.

5B-07. ANCHORS:

a. Anchors shall have turned ends and, where practicable, shall extend not less than 12 inches into masonry unit and tile work and 8 inches into brick work. Anchors shall be formed to lie flat in joints.

b. Expansion bolts and screws shall have metal shields, except fiber plugs may be used for interior work. Steel drive bolts with split shank and closed ends may be used in lieu of expansion bolts in concrete.

c. See other sections of the specification for loose anchors which are used in connection with masonry, bonding to concrete and stone, and similar conditions.

5B-08. LINTELS:

a. Built-up lintels shall be bolted or riveted together, with separators if required. End bearings shall not be less than 1 inch per foot of span; minimum bearings 4-1/2 inches. Lintel shall be set with clearance of 1/2-inch above head of buck or frame.

b. Masonry furring shall have angle lintels not less than 1/4 inch by width and depth of leg 1/2-inch greater than thickness of furring. For clear spans exceeding 5 feet, lintels shall be supported by intermediate wall anchors spaced at intervals of not more than 4 feet.

c. Lintels for free-standing masonry furring shall be as specified in Paragraph a.

5B-09. PIPE SLEEVES:

a. Sleeves through masonry or concrete for passage of sub-drains, wall hydrants, interior downspouts discharging at grade and similar items, shall be standard weight, wrought iron, mild steel or cast iron, size to allow 1/4 inch between sleeve and pipe. See also Mechanical Sections of the Specifications.

5B-10. THRESHOLDS:

a. Metal shall be not less than 3/16-inch thick. Cast thresholds shall have non-slip traffic surface, whether plain, checkered or channeled. Thresholds at double doors shall have countersunk keepers for door bolts. Thresholds at fire or exit doors shall have countersunk or integral raised strike to engage panic bolt. Thresholds shall break around hinge box of floor hinges.

b. Thresholds shall be fastened with at least one row of flat heat screws not less than 1/4-inch diameter. Fastenings into concrete shall be expansion type.

5B-11. PIPE RAILS:

a. Rails with flush fittings shall be assembled with full welded connections.

b. Rails with screw fittings shall have plain malleable iron fittings, Threads shall not show after assembly.

c. Posts shall be set in sleeves preset in concrete and accurately sized sockets drilled in stone. Space around pipe shall be caulked with lead and covered by flange plate, excepting where details show removable rails. Posts and rails shall be secured to metal with 1/4-inch tap screws and to masonry with 3/8-inch expansion bolts through screwed-on flange fittings.

5B-12. RAIL BRACKETS:

a. Brackets shall be spaced not more than 6 feet apart nor more than 11 inches from the end of rail and shall be secured with bolts as required by wall construction.

5B-13. AIR CONDITIONER SLEEVES:

a. Sleeves for air conditioning units shall be "Thru-the-wall-Sleeves" complete sleeve package, with all aluminum sleeve, exterior Masonite panel, interior galvanized steel panel, and aluminum louver, as manufactured by Westinghouse Electric Corporation.

5B-14. MANHOLE COVERS AND FRAMES:

a. Shall be of types and sizes detailed on the drawings of Gray iron, Neenah or Equal.

END OF SECTION

5B-09. PIPE SLEEVES:

a. Sleeves through masonry or concrete for passage of sub-drains, wall hydrants, interior downspouts discharging at grade and similar items, shall be standard weight, wrought iron, mild steel or cast iron, size to allow 1/4 inch between sleeve and pipe. See also Mechanical Sections of the Specifications.

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5B-14. MANHOLE COVERS AND FRAMES:

a. Shall be of types and sizes detailed on the drawings of Gray iron, Neenah or Equal.

END OF SECTION

5-c Metal Deck

5A-01 General:

a. The work under this section includes all labor, material, equipment and services required for the furnishing and installation of Metal Decking and Corruform.

b. AISI and SDI Specifications are hereby made a part of these Specifications.

5A-02 Materials:

a. Metal Deck shall be 1 1/2"-22 Gauge, painted type "B".

b. Corruform shall be uncoated Standard Corruform.

5A-03 Workmanship:

a. Metal Deck shall be continuous over a minimum of three spans. Deck shall be secured to each support by welding through washers. End lap joists shall be welded to supports not to exceed 12" O.C. and at intermediate supports not to exceed 24" O.C.

b. Corruform shall be laid out with corrugated edges up, with corrugations perpendicular to supports.

END OF SECTION

5D STEEL JOISTS:

5D-01 General:

a. Work under this section includes all labor, materials, equipment and services required to furnish and erect all steel joists and related items shown on the drawings.

b. All Steel joists shall be manufactured by:

1. A Member manufacturer of the Steel Joist Institute, or

2. A member manufacturer who is not a member of the Steel joist Institute who shall submit an affidavit that the materials, design, and manufacture of the joists to be provided will meet the requirements of the Steel Joists Institute Standard Specifications, 1965 Edition.

c. All steel joists shall have one shop coat of asphaltum base or other metal protective paint of a type standard with the manufacturer.

5D-02 Materials:

a. Materials for steel joists shall comply with Section 5A-02, Materials, of the "Standard Specifications" hereinbefore mentioned.

b. Material for bridging and other items shall comply with Structural Steel Section.

5D-03 Erection:

a. All bridging and bridging anchors shall be installed before construction loads are placed on the joists. Bridging shall support the top chords against lateral movement during the construction period and shall hold the steel joists in an approximately vertical plane. The ends of all bridging lines terminating a wall for beams shall be anchored thereto at top and bottom chords. Weld for attachment of bridging shall not damage the joist member

b. Where plans call for a bottom chord extension, the full bottom chord shall be extended to the required distance.

c. Extended ends of steel joists shall be designed as cantilever beams and their reactions carried back at least to the first interior panel point of the joist.

d. Where a joist is interrupted to provide an opening, angle or channel headers shall be provided to support the interrupted joist.

e. Bridging;

Cont.

5D-03 Erection: CONTINUED-

e. Bridging:

1. Bridging for all joists and all special joists, unless shown otherwise on the Drawings shall be X-type and shall be welded to all joists and beams and at the points of intersection of bridging members.

2. Refer to Drawings for bridging locations, details and sizes.

3. In no case shall location of rows of bridging exceed the maximum spacing established by S.J.I. Standard Specifications, nor shall size of members be smaller than required by the aforementioned Specifications.

END OF SECTION

6A-03. WORKMANSHIP:

a. Cooperate with other trades engaged in the work on the building to the end that unity of action will assure the orderly progress of work. Do necessary cutting, boxing and protection of jambs, steps, sills, projecting courses, coping and similar items. Construct scaffolds, ladderways, ramp runways, hoistway and other staging necessary and remove them as directed.

b. Workmanship: Work shall be performed according to the best standards of practice and under competent supervision. Lay out work so as to produce results according to the intent of the drawings and to accomodate the work of other trades.

c. Bolted Work: Bore holes of the same diameter as bolts, true to line. Drive bolts into place with a snug fit and provide with plates or washers between bolt head or nut and wood surface. Turn up nuts, bolts or lag screws and make tight at the time of installation and again just before being enclosed with other fixed materials or at completion of work. Anchors into hollow masonry units shall be toggle bolts, mollie bolts, through bolts or be in concrete filled cells. Bolts for securing woodwork to metal shall be of length required to suit condition. Bolt fastenings to solid masonry and concrete shall be embedded wherever possible; otherwise use cinch anchors set in drilled holes.

d. Grounds: Dressed wood grounds shall be furnished and installed for securing all wood trim and as otherwise detailed. Ground shall be of proper thickness and unless otherwise indicated, shall be 1 1/2" wide.

e. Framing: All lumber shall be fitted and set to the required lines and levels and secured in place. Nailing shall conform in size and quantity to not less than that as set forth in F.H.A. Minimum Property Requirements.

f. Nailing Blocks: Secure in position to receive, support and engage the secured parts of the work. Nailing blocks to be embedded in concrete or masonry shall be anchored with bolts or spikes. See details.

END OF SECTION

SECTION 6B - FINISH CARPENTRY

6B-01. GENERAL:

a. Millwork: Protect from moisture. Handle to prevent staining or marring surfaces. Back prime parts to be installed against masonry or concrete. Set all finish work straight, plumb and level, in true alignment, fitted and secured in place. Set work in place by concealed methods. Where nails are unavoidable, countersink. Set and brace items to hold positions and shapes, and complete work free from warp, open joints or other defects.

b. Application of finish hardware: Receive, store and be responsible for all finished hardware, which shall be furnished under another section. Apply hardware, fit and adjust. Use care not to damage work when applying hardware. Prior to completion of building, check and adjust all hardware and leave in perfect working condition. After installation, replace wrappings (furnished by manufacturer) on knobs, handles.

c. Finishing Cabinet Grade Pine Plywood: If fixtures constructed with pine plywood have become damp due to excessive moisture, all surfaces shall be allowed to dry: then, the surfaces shall be lightly sanded to remove the fuzzed grain.

1. In the event the plywood surfaces become damp after the first coat or a primer coat has been applied, the wood shall be allowed to dry naturally. Under no conditions will forced drying be permitted.

2. All surfaces shall be sealed with U. S. Plywood's Firzite or an oil based primer before painting. Also all edges shall be sealed before painting. (Refer to Paint Schedule for Paint or Stain Specifications).

3. Under no condition will water based paints or quick drying lacquers be permitted.

4. If checking occurs due to improper handling, the surfaces shall be sanded down and resealed before refinishing.

6B-02. MATERIALS:

a. Cabinet Grade Pine Plywood: Shall be "Old Craftsman Pine" plywood of N-B Grade as manufactured by U. S. Plywood Corporation. The "N" faces, no discoloration or heart and sap streaks shall be allowed. Patches will be limited to 12" long and 1/8" wide shims only. No more than two shims patches shall be permitted per 4'x8' or 4'x10' sheet of plywood and these allowed only at the ends of the full sized sheet.

1. The minimum face veneer thickness shall be 1/16" after sanding. All core plies and each face shall be pine; no fir will be allowed.

2. A maximum moisture content of 12% shall be allowed for any ply during the manufacturing process. No core ply shall contain voids which exceed 3/8" in diameter. All glue lines shall be of protein type glue.

3. Cabinet Grade Pine Plywood shall be used for all exposed surfaces of base and wall cabinets, including shelving in cabinets and drawer bottoms.

b. Trim: (Interior) B and Better White or Ponderosa Pine shall be used for trim.

c. Laminated Plastics: Laminated Plastics shall be 1/16" thick of colors and patterns as selected by Pionite. Products of same collors and patterns but manufactured by Formica, Nevamar, Panelyte, and Parkwood Laminates are approved.

d. Wood Steps: Wood steps shall be constructed as detailed. Treads and risers shall be Fir, tongued and glued together. All work shall be well-nailed and free from squeaks. Surfaces of treads shall be carefully hand-sanded to an even smooth surface, ready for finishing.

e. Shelving: Plywood shall be DFPA INT AB. Where not otherwise noted, shelving shall be 3/4" thick plywood, exposed edges finished with 1/2" x 3/4" Oak strips securely glued and nailed.

f. Cabinet, Counter and Shelving Hardware:

1. Doors: Stanley #332 x CMD hinges.
Stanley #4482 x 1 1/4 x CMD pull.
Stanley #46 ALD magnetic catch.

2. Drawers: Knap & Vogt #KV-1300 slides.
Stanley #4478 x CMD pull.

3. Shelf standards, Knap and Vogt #255 standards and #256 supports.

4. Hardware of similar design and function as manufactured by the Engineered Products Company; Washington Hardware Company; Desingware Industries, Inc.; Corbin and Sargent are approved.

g. Prefinished Paneling shall be 1/4", as manufactured by Georgia Pacific, with matching stock moldings. Panels shall be finished at the factory and packaged in protective containers. Finish shall include back-sealing with a sealer to inhibit moisture penetration and provide good adhesion for installation with an adhesive. Paneling shall be manufactured to conform to Commercial Standard CS 35-61.

6B-03. WORKMANSHIP:

a. Finished work shall be erected plumb, true, square and in accordance with the drawings. Work assembled on the job shall be erected in accordance with the "Cabinets, Counters & Shelves" article as herein-after specified. Drill holes in hardwood for all nails, finish work shall be blindnailed insofar as possible, and all surface nails shall be set and puttied to match material.

b. Trim shall be cut to fit and mitered at corners, miters shall show only a hairline crack.

c. Cabinets, Counters and Shelves: All milwork items shall be shop fabricated and delivered to the job complete insofar as practical and ready for installation. Fabrication shall be according to job measurements. Fabrication and workmanship shall be as specified for case work in the publication "Quality Standards of the Architectural Woodwork Industry", 1961 issue, for Custom Grade Work.

1. Hardware shall be furnished and installed by this section in accordance with the following list:

All Doors: (1) 2 hinges
(2) 1 door pull
(3) 1 magnetic catch

All Drawers: (1) 2 drawer slides
(2) 1 drawer pull/2 drawer pull

Adjustable shelves: 4 shelf supports each shelf.

2. Base cabinet tops and splashbacks shall be surfaced with plastic laminate as previously specified.

3. Counter top core shall be 3/4" thick, 5 ply, grade 1-D veneered plywood with face veneer of close-grained hardwood.

4. Edges and sides of tops and splashbacks shall be covered with laminate as detailed.

5. Splices in tops shall be as few as possible and where necessary shall be made with neat joints aligned with concealed clamping devices.

6. All cabinet tops shall be job fit before laminate is applied. Tops shall be screwed to bases and all cabinets shall be securely fastened to walls.

d. Shelving shall be fabricated according to drawing details: install level and true, nails shall be set and puttied.

e. Prefinished panels shall be installed as shown on drawings. [illegible] strips, use 4d, 1 1/3" finishing nails spaced 12" apart around edges and 16" apart elsewhere. Set nails 1/32" and close holes with matching putty stick or colored plastic wood. To avoid making shiny spots, nail holes shall not be sanded or steel wooled after filling.

END OF SECTION

7A Waterproofing

7A-01 General:

a. The work under this section includes all labor, material equipment and services required to furnish and install membrane waterproofing.

b. This includes waterproofing walls in contact with earth where elevation of floor adjacent to walls is lower than finish grade on opposite side of wall.

7A-02. Materials:

a. Primers: For use with coal tar pitch, primer shall be a low viscosity, crystal free oil that can be brush applied at normal temperatures without heating. -It shall be equal in all respects to Barrett "Carbosota" and for use with asphalt, primer shall be Barrett Crystal Asphalt Primer.

b. Felt: Felt membrane for exterior walls shall be No. 15 and manufactured from extra long fibers and impregnated with selected tars. It shall be smooth in texture and uniform in thickness.

c. Mastic: Shall be uniform in body and blend, self-healing and completely impervious to water. It shall be equal in all respects to ASTM Des. D450, Type B, where pitch is required. Asphalt mastic shall conform to ASTM D449, Type B.

7 A-03. WATERPROOFING WALLS BELOW GRADE:

a. The Contractor shall thoroughly clean the walls before applying waterproofing, removing fins and loose material. All cracks and holes shall be pointed with mortar. Surfaces to be waterproofed shall be first primed with creosote oil, using one gallon per square.

b. This should be followed with a mop-on coat of coal tar pitch upon which 3 layers of 32" side tar-saturated felt is applied, lapping each sheet 21-1/2" over the preceding sheet and lapping the ends 6". Each sheet shall be mopped full width of the lap with hot pitch using not less than 25 lbs. per square for each mopping. The felt shall be laid without wrinkles or buckles and the finished membrane shall be free from pockets or blisters. Felts shall extend from toe of footing to 6" below finish grade on exterior walls, then felts shall be turned in back of outer 4" thickness of masonry and extended up 6" above exterior Finished grade. On walls adjacent to grade below building, extend felts to top of grade. After installing felts as above, the entire surface will receive a uniform coat of hot pitch using not less than 50 lbs. of pitch per square, and the pitch shall

not be heated above 350° F. While pitch is still tacky, embed 1/8" thick layer of hard fiberboard over entire surface of wall membrane to protect felts from damage by backfill.

END OF SECTION

7B BUILDING INSULATION

7B-01. GENERAL:

a. Work under this section includes all batten insulations.

b. Insulation over acoustical ceilings are included in that section of the specifications.

c. Insulation under metal siding and roofing are included under Section 5A Pre-Engineered Metal Building.

7B-02. MATERIALS:

a. Batten type insulation shall be composed of inert, non-moisture absorbing, non-combustible material fabricated into battens 16" wide, backed to Kraft paper, with tab edges to provide overlapping installation and vapor barrier. Material shall be "full thick".

7B-03. WORKMANSHIP:

a. Batten insulation shall be installed with Kraft side to interior of building. Tabs shall overlap and be secured in place. Cut ends of battens shall be butted and topped with 3" duct tape.

END OF SECTION

7C Roofing, Sheet Metal Work and Insulation

7C-01 General:

a. The work under this section includes all labor, material equipment and services required to install roofing, sheet metal and insulation

7C-02 Materials:

a. General: The type of the various kinds and finish of sheet metal to be used is specified hereinafter under the individual items. See drawings for location, gauges, thickness.

b. Cements: Plastic asphalt cement, lap cement, and quick-setting adhesive cement shall be as recommended by the roofing manufacturer.

c. Bituminous Plastic Cement: Shall conform to Federal Specification SS-C-153, Type I.

d. Asphalt Coating for Paint: Shall conform to Federal Specification SS-R-451.

e. Roof Insulation: Johns-Manville "Fesco Board Celotex Corp.", Celo-Therm, Thickness shall be total 1". Roof Insulation shall meet class 1 insulated steel deck construction as listed by Factory Mutual.

7c-03 Application of Roofing:

a. Shall be installed in strict accordance with manufacturer's specifications and application recommendations as published in the 1967 Sweet's and as modified by these specifications.

b. Built-Up Roof Base Flashing: Ruberoid asbestos combination flashing. Flashings to be installed immediately after roof membrane is applied and shall be installed in strict accordance with the requirements for 20 year flashing endorsement Type 5 or Type 6 as required and as published in the 1969 Sweet's.

7C-04 Sheet Metal Installation and Fabrication

a. Joists and Seams: shall be avoided as much as possible. Overlap seams in direction of flow of water. - Make ample provision for expansion.

b. Soldered Seams and Joints: shall have metal tinned for full area of contact. Soak single locked seams with solder. Do soldering slowly with well heated coppers, thoroughly heating seams and completely filling them with solder.

c. Clean Sheet Metal: as each section is completed. Neutralize excess flux by washing metal with a solution of washing soda. After cleaning wash with clear water. Avoid staining or discoloring adjacent work.

d. Sheet Metal Work: shall be water and weathertight with lines, arrises and angles sharp and true and plain surfaces free from waves and buckles.

e. Counter Flashing: and through wall flashing shall be formed in lengths of not to exceed 10'. The counter flashing shall turn down over base flashing not less than 4". Joints shall lap 4". Counter flashing shall be formed to provide spring action against the base flashing.

END OF SECTION

SECTION 7D - CALKING

7D-01. GENERAL:

a. This section describes materials and methods of application for calking. Application shall be coordinated with requirements as described in other sections and noted on Drawings.

b. Materials shall be delivered to the project site in sealed containers and shall be used in strict accordance with Manufacturer's printed directions.

7D-02. MATERIALS:

a. Materials shall meet requirements of referenced Federal Specifications and Standards.

Calking compound TT-C-598, grade best suited for the purpose.

b. Backing for calking compound shall be raveled strands of rope fiber, free from oil or other staining substance, or untarred, picked (loose), fine hemp fibers.

7D-03. CERTIFICATION:

a. Contractor shall furnish certificates from an approved manufacturer attesting that materials meet specified performance test requirements.

7D-04. LOCATIONS:

a. All locations indicated on the drawings and exterior joints around perimeters of frames built into masonry shall be caulked with calking compound, except sills of door frames and sills of windows.

7D-05. PREPARATION:

a. Joints shall be cleaned of all dust and surface dirt, oil, and surface protection on metal items before applying calking compound.

b. Protective coatings on metallic surfaces shall be removed by solvent that leaves no residue.

c. Joints to receive calking compound shall be not less than 3/4" deep. Voids beyond that depth shall be packed with backing material specified for calking compound, and shall be primed before calking.

d. Joints or parts of joints at perimeter of frames in exterior walls less than minimum width or depth shall be enlarged to the required width and depth by careful cutting or grinding. Minor variations shall not be corrected. Damaged adjacent or connecting work resulting from cutting or grinding shall be restored.

7D-06. APPLICATION:

a. Calking compound shall be forced into the joints mechanically, with pressure to expel all air and provide a solid filling. Surface shall be uniformly smooth and free of wrinkles. Joints in wash surfaces shall be filled slightly convex. Joints back of separate staff beads or bed moulds shall be calked and inspected before beads or molds are permanently installed. Joints adjacent to painted work shall be calked before final coat of paint is applied.

b. Joints shall be filled to within specified depth from the surface with specified backing filler and remainder of joint then filled with calking compound. Material shall finish flush with adjacent surfaces where not otherwise specified.

c. Color of calking compound shall produce the closest possible match to mortar when used in connection therewith, and to adjacent materials when used between same, within the limitation of specified materials. Color of joints against or between aluminum parts shall be aluminum.

7D-07. CLEANING:

a. Surfaces of materials adjacent to calked joints shall be cleaned free of smears of compound or other soiling due to calking operations as work progresses.

b. Masking tape shall be used to prevent smears on masonry which would be difficult to clean.

END OF SECTION

7E Dampproofing

7E-01 General:

a. The work under this section includes all labor, material, equipment and services required to furnish and install Silicone Dampproofing and under slab membrane.

7E-02 Materials:

a. Silicone shall be a 5% solution conforming to Federal Specification SS-W-110b.

b. Membrane shall be Moistop as manufactured by Sisalkraft.

7E-03 Workmanship:

a. Silicone shall be sprayed on exterior exposed concrete block surfaces.

b. Vapor Barrier shall be installed and sealed in accordance with manufacturers instructions.

END OF SECTION

8A HOLLOW METAL WORK

8A-01. GENERAL:

a. The work under this section includes all labor, materials, equipment and services to completely furnish and install all hollow metal doors and all pressed steel frames as shown on the drawings.

b. Underwriters' Laboratories Requirements: Where labeled work is shown or specified, the materials construction and erection shall comply with the Underwriters' standard requirements, notwithstanding anything in the Specification or on the Drawings to the contrary. Labeled frames shall be provided for all labeled doors.

c. Shop Drawings of all hollow metal work shall be submitted for approval.

8A-02. MATERIALS:

a. Doors:

1. Hollow metal doors shall be of types and sizes as shown on the Drawings. Doors shall be constructed of two 18 gauge stretcher leveled prime quality cold rolled steel sheets. Vertical stiffeners and top and bottom channels shall be 16 gauge steel. Vertical edge channels shall be 14 gauge steel. Vertical edge joints between face sheets shall be continuously welded and ground smooth to provide a completely flush door with no exposed seams. All doors shall be sound deadened with mineral wool or other sound deadening material.

2. Doors with glass light openings shall have manufacturer's standard beads. Stiles, top rails and center rails shall be not less than 5-1/2" when glass or louvers are required, bottom rail shall be not less than 8".

3. Double doors, with inactive leaf, shall have 18 gauge astragal attached to active leaf.

4. All doors shall be bonderized and painted one coat rust inhibitive quality primer.

5. Doors shall be mortised and reinforced for hardware. Mortise hardware reinforcement shall be drilled and tapped in the factory.

b. Pressed Steel Frames: Frames shall be combination frame and trim type, [illegible] as manufactured from the patent leveled open hearth furniture steel. Frames shall be No. 16 gauge steel. Corners of frames shall be mitered, fitted, welded, and dressed to produce rigid invisible joints. Frames shall be provided with [illegible] for each 5' or less in height, with an additional anchor for each 2'-6" or fraction thereof of additional height. All frames which extend to the floor shall be provided with temporary spreaders and with anchor clips at each jamb for fastening the frame to the floor construction. Anchoring devices for frames shall be 1/4" x 1" bar stock. Frames shall be [illegible], reinforced, drilled and tapped, and provided with No. 26 gauge covers to conceal the mortise type hardware, and shall be reinforced for surface applied hardware. Strike and hinge reinforcing shall be enclosed and protected by welded in place plaster guards. Finish for frames shall be same as for doors.

c. Finish: All work shall be given a prime finish at the factory. Doors and frames shall be bonderized and painted with one coat of neutral grey primer, baked on.

d. Hardware: [illegible] for all doors will be standard builders' template hardware, furnished under another section of the Specifications. Templates for all hardware will be sent, free of charge, to the door manufacturer by the hardware company.

8A-03. WORKMANSHIP

a. All hollow metal work shall be the best grade of modern shop and field work and shall be fabricated by reputable manufacturers' specializing in this type of work. It shall be reinforced, fitted and fabricated. Surfaces shall be free from buckle, straight and true planes with square corners and angles and with members set in proper alignment; welded joints shall be made, cleaned off; dressed clean, smooth and flush with surface of base metal.

b. Installation: All frames shall be installed plumb, straight, square and level, at proper elevation, plans and location and in alignment with the work of other trades. They shall be well braced during erection and shall be anchored in place. All doors shall be installed [illegible] with hardware, fittings and accessories. They shall [illegible] and be free from [illegible] binding, operating smoothly and [illegible] without warping.

8B ALUMINUM WORK

8B-01. GENERAL:

a. Furnish labor, material and other services to complete the fabrication and installation of frames, doors and other related items as shown on the drawings.

b. Shop drawings of all work required under this section shall be submitted for approval before fabrication of any materials is commenced.

8B-02. MATERIALS:

a. Aluminum Doors:

1. Doors shall be as manufactured by Kawneer Co., Inc.

2. Door Sections shall be extruded from 6063-T5 aluminum alloy. Major portions of door stiles shall be .125" minimum thickness, glazing molding shall be .050" thick.

3. Construction, Doors: Vertical stiles shall be 3 17/32", top rail shall be 3 17/32", and bottom rail 6 17/32". Corner construction shall consist of both sigma deep penetration weld and mechanical fastening. Glazing stops shall be snap-in type with neoprene bulb type glazing. No exposed screws shall be required to secure stops. Stops on the exterior side shall be lock-in tamper proof type. Door leaf shall be equipped with adjustable mechanism in top rail which will provide for minor clearance adjustments after installation. Exterior doors shall be weather-stripped on three sides with metal-backed pile cloth installed in the door and/or frame. Bottom shall be weathered with a pile sweep strip applied to the door rail.

4. Hardware: All hardware, except cylinders, shall be furnished and installed in the doors under this section.

a. Threshold: Aluminum #69-140.

b. Locking device: Manufacturers Standard.

c. Cylinders: To be furnished under Finish Hardware Section for installation in doors.

b. Framing Sections:

1. Framing sections shall be as manufactured by the Kawneer Co., Inc.

2. Framing members, transition members, mullions, adapters and mountings shall be extruded of aluminum alloy 6063-T5. Screws, miscellaneous fastenings and internal components shall be of stainless steel, or corrosion resistent materials according to manufacturer's standard. Glass framing members shall provide for flush glazing on all sides with through sight lines and no projecting stops or face joints. The system shall provide resilient settings for glass and panels by use of neoprene gaskets on both sides of the glass.

8B-03. WORKMANSHIP:

a. Erection: All items included in this section of the specifications shall be installed in prepared openings. They shall be set plumb, square and level in correct alignment with floors, ceilings, walls, and other work. Anchor to masonry with 1/4" aluminum screws in lead shields spaced not more than 30" o.c., anchor to wood with 1/4" aluminum wood screws spaced not more than 30" o.c. All joints between frames and masonry shall be calked with sealant material as specified in other sections. All exterior work shall be watertight.

b. All joints shall be fitted, all cut edges shall be true and accurate, free of burrs or rough edges. Joints shall show only hairline cracks. Joints in exterior work shall be made up with sealant backing.

c. Glazing instructions are furnished under another section of these specifications.

d. After erection and glazing, check and re-adjust as required all items of operating hardware on doors installed under this section.

e. Cleaning and protection: After erection the Contractor shall protect exposed portions of the grid framing from damage by grinding and polishing machines, plaster, lime, acid, cement, or other harmful compounds.

END OF SECTION

8C Finish Hardware:

8C-01 General:

a. The work under the section shall include labor, material, equipment and services required to furnish and install Finish Hardware.

b. All allowance is to be included in the contract for the purchase of all hardware. See Section 1C Allowance.

END OF SECTION

8D GLASS AND GLAZING

8D-01. GENERAL:

a. The work under this section includes all labor, materials, equipment and services to furnish and install all glazing materials as shown on the drawings.

8D-02. MATERIALS:

a. Plate glass shall be 1/4" polished plate as manufactured by Pittsburgh Plate Glass Co.

b. Tempered glass shall be clear, 1/4" thick polished plate "Herculite K" as manufactured by Pittsburgh Plate Glass Co.

c. Wire glass shall be clear, 1/4" wire glass as manufactured by NuWeld.

d. Glazing compound shall be as manufactured by Trenco.

8D-03. WORKMANSHIP:

a. Glazing Requirements: Prior to glazing, wipe all surfaces clean and free of protective coatings, moisture, and dust. Perform glazing only when temperature is 40°F, or above. Glazing shall impose no strain upon the glass. Center glass with equal clearance at all edges between glass and frame. Glazing shall conform to the recommendations of Glazing Manual of the Flat Glass Jobbers Association.

b. Wood Doors: Apply ample compound to rabbet around entire perimeter. Press glass, centered, into rabbet so that compound covers glass completely in rabbet, allowing at least 1/8" depth of back putty. For all glass having dimensions larger than 50 united inches, maintain centered position and sealer thickness by the use of setting blocks at the sill and spacers, front and back, on all four sides. Bed bead against glass and bottom of rabbet with compound, and secure bead in place. Strike surplus compound from both sides of glass at an angle, avoiding undercutting.

c. Hollow Metal Doors and Frames: Glaze with glazing tape on each side. Support glass all around on neoprene setting blocks with no metal-to-glass contact.

d. Upon completion and approval of glazing, remove labels and label adhesive from glass. Clean droppings of construction materials from glass.

e. Cleaning and Protection: Upon completion of glazing, clean all materials installed under this section, adjacent materials soiled by this operation and polish glass and aluminum. Contractor shall be responsible for protection and final cleanup. Note Well: Any aluminum stained, discolored or otherwise damaged will be rejected whenever so noted and shall be removed and replaced with new material. Broken glass shall likewise be removed and replaced with new materials.

END OF SECTION

WOOD DOORS

8E-01. GENERAL:

a. Work under this section includes all labor, materials, equipment and services required to furnish and install all wood doors as shown on the drawings.

b. Shopdrawings shall list doors by numbers shown on plans, show all openings for grilles and glass.

8E-02. MATERIALS:

a. Wood doors shall be flush type Solid Stoved Core or Hollow Core. Door, where so scheduled, shall have light and louver opening and be provided with standard wood beads.

b. Face Veneers shall be good grade, rotary cut birch or gum of standard thickness suitable for natural or stain finish.

8E-03. WORKMANSHIP:

a. Doors shall be hung plumb, level and square in openings. When planing to fit opening trim equally from both sides. Bevel lock slide of door 1/8" in 2" for clearance.

b. Doors shall be trimmed to allow a 3/32" joint between door and frame, hardware shall be fitted into sized mortises without patching or shimming.

END OF SECTION

8F OVERHEAD DOORS

8F-01. GENERAL:

a. The work under this section of the specifications includes all labor, material, equipment and services required to furnish and install all Steel sectional Overhead door as shown on the drawings.

b. Shop drawings shall be submitted for approval.

c. Manufacture - Overhead Door Corporation.

8F-02. MATERIALS:

a. Steel properties: Sections rolled of 20 gauge zinc coated steel, prime painted outside, and ribbed and grooved for added strength. All stiles are formed of heavier gauge steel.

b. Stile construction: 2" deep channel-shaped and center stiles are accurately cut to fit the contour of the rolled sections and securely fastened to the section.

c. Hardware: Salt Spray Steel hinges and fixtures, full floating hardened steel ball bearing rollers. Doors reinforced with steel struts.

d. Counterbalance: Torsion springs on crossleader shaft. Tapered drums. Galvanized pitt cables.

e. Tracks: Salt Spray Steel.

f. Weatherstrip: Neoprene weatherstrip is provided for effectively sealing the bottom of the door against weather.

g. Operation: Electric operators models FL, 1/3 HP; and SFL, 1/2 HP.

h. Warranty: Doors guaranteed against faulty workmanship or material for a period of one (1) year.

8F-03. INSTALLATION:

a. Doors shall be installed according to manufacturer's instructions by local Authorized distributor.

END OF SECTION

9A CERAMIC TILE

9A-01. GENERAL:

a. Submit one sample panel of each type of tile for approval. Submit samples of base, trim and accessories; submit sample of marble stool and threshold.

b. Deliver and store materials in manufacturer's original packaging with seals intact. Store in a manner to prevent damage, deterioration and contamination.

c. Approved manufacturers: American Olean; Cambridge; mosaic.

9A-02. MATERIALS:

a. Tile shall be "standard grade" in accord with USAS A 137.1, 1967. Floor tile and accessories shall be provided by a single manufacturer.

1. Floor tile shall be unglazed ceramic mosaics, 1"x1", 2"x1", 2"x2", or a combination of sizes. Colors shall be as selected by the Owner.

2. Base shall be bright glazed round top, coved bottom units, 4"x6" face size provided with interior and exterior corners and matching trim shapes. Internal corners shall be square; external corners shall be bullnosed.

b. Thresholds shall be Cherokee White marble; machined to profiles indicated; full length; polished on exposed faces.

c. Setting Materials:

1. Portland Cement: ASTM C-150, Type I, white and/or gray as required.

2. Hydrated Lime: ASTM C-206-49 or C-207-49, Type S.

3. Sand: ASTM C-144-52T, washed clean and graded.

4. Water: Clean and potable.

9A-03. WORKMANSHIP:

a. Mixing and Proportioning:

1. Mortar Bed (floors): 1 part Portland cement, 6 parts sand, water to make a stiff mix.

2. Portland Cement Grout: 1 part Portland cement, 1 part sand.

b. Layout, Cutting and Fitting:

1. Center fields and patterns on applied areas with no tile less than one-half size.

2. Cut and drill tile and trim shapes accurately without damage. Rub exposed, cut edges smooth with abrasive stone.

3. Joints in base shall be vertical and horizontal and joints in floor tile shall be perpendicular and parallel to walls. Locate expansion joints and accessories before tile is installed

c. Installation Of Setting Materials, Tile and Grout shall be in accord with following reference specifications.

1. Ceramic mosaic tile installed in Portland cement mortar; USAS A 108.2-1967.

d. Tolerances: Finished installations shall be trued to a tolerance of ± 1/4" within any undivided space and ± 1/16" within any running foot when set in mortar.

e. Marble Thresholds: Fit thresholds into door frames without joints; set in full bed of adhesive; grout in thresholds with floor tile grout.

END OF SECTION

9B ACOUSTICAL TREATMENT:

9B-01. GENERAL:

a. The work included under this section includes all labor, materials, equipment and services necessary to install the acoustical work in all areas indicated on the drawings.

b. No work is to be started until all glazing has been completed and all exterior openings closed in. Temporary or permanent heat shall be furnished by the Contractor to provide uniform temperature of at least 60 degrees before, during and after installation of acoustical tile.

9B-02. MATERIALS:

a. Acoustical Lay-In Panels, Regular: Acoustical Lay-In Panels shall be 5/8" thick x nominal 24"x48", having a factory applied White washable finish, light reflectance value not less than 75%, meeting requirements of Federal Specification SS-118b, Class A Incombustible or Federal Specification SS-S-00118, Class 25, labeled be Underwriter's Laboratories for flame spread 0-25.

b. Exposed Tee Grid System shall be Donn DV Exposed Grid System as manufactured by Donn Products, Inc.; Eastern Products Corp.; National Rolling Mills; or Chicago Metallic Corp. Components shall be formed from commercial quality cold-rolled steel, electra-zinc coated and pre-painted. Exposed finish shall be low sheen satin White. The system shall support the ceiling assembly, including lighting fixtures where applicable, shown on the Drawings with a maximum deflection of 1/360 of the span.

c. Suspended Ceiling System: The ceiling pattern shall be as shown on the Drawings using the following components:

1. Main Beam shall be double thickness web, bulb section design, of .025" commercial grade steel, web height 1-1/2" minimum, and have a 15/16" minimum width bottom flange. Exposed bottom flange shall be continuous with unbroken roll formed cap the length of the member. Cap shall be steel, with low sheen Satin White finish. Beam shall be routed 6" center to center continuously along its web length to locate intersecting tees.

2. Cross Tees shall be double thickness web, bulb section design with 15/16" bottom flange. Exposed bottom flange shall be continuous with unbroken roll formed cap the length of the member. Cap shall be steel, with low sheen Satin White finish. Cross tees longer than 24" shall be center routed to locate transverse cross tees where required. Cross tees to have web ends formed for attachment to adjoining tee through the main beam tee, or for locating through the roof of transverse cross tees, providing minimum torsional movement and lateral displacement.

3. Beam Cross Tees shall be .018" steel with 1 1/2" web height.

4. Standard Cross Tees shall be .018" steel with 1 1/4" web height.

5. Angle Moldings shall be not less than 15/16" x 15/16"x .020" steel with low sheen Satin finish.

6. Accessories and splices shall be part of the grid system and installed as required.

7. Hold Down Clips for acoustical tile weighing less than 12 pounds per cubic foot.

9B-03. WORKMANSHIP:

a. Erection:

1. Suspend main beams from structure by minimum 12 gauge galvanized tie wires spaced not more than 5'-6" o.c. along main beam axis. Main beams shall be spaced 48" o.c.

2. Acoustical Tile pattern has 48" dimension parallel to bulb tees; Main Beams shall be spaced 48" o.c. normal to bulb tees; Standard Cross Tees, spanning 48" between Main Beams, shall be spaced 24" o.c.

3. The assembled grid shall be level to within 1/8" in 12 feet and shall be at right angles to walls and to individual grid members.

4. Metal edge moulding, finished to match the main tees and cross tees, shall be installed wherever the suspended grid abutts walls, windows, columns and other vertical surfaces. The metal moulding shall be attached to vertical surfaces and all corners, interior and exterior, shall be formed and coped to form only hairline joints.

5. Main Beams and cross tees intersecting edge moulding shall be locked in place, perpendicular to moulding, straight in alignment and flush at intersections. All intersecting members and splices shall be locked in place and cut to form only hairline joints. Care is to be taken that all tees are also in vertical alignment.

6. Coordinate work in this section with other trades. Diffusers and light fixtures shall always "center", unless they are specifically detailed otherwise. In the event that a fixture or diffuser should occur at the intersection of the grid tees, the ceiling shall be framed and supported independently of the fixture or diffuser.

b. Light Fixtures:

1. Surface mounted flourescent fixtures may be attached directly to a "Main" Beam. Whenever the grid and lighting layout is such that a fixture support would attach to a beam cross tee or secondary cross tee, a main beam shall be substituted to support the fixture and this tee shall be supported by ties to building structure spaced not more than 5'-6" o.c.

2. "Lay-In" type fixtures may be supported on the ceiling grid, but shall be framed on four sides by main beams and the beams shall be supported at each of the four corners to the building structure.

c. Cleaning: Remove all debris, pieces of tile and grid system from the building. No tile of grid system material shall be LEFT ON TOP OF CEILING.

END OF SECTION

SECTION 9C - RESILIENT FLOORS

9C-01. GENERAL:

a. Type, size, color and pattern are noted on drawings and schedule of finishes.

9C-02. MATERIALS:

a. Materials shall meet requirements of referenced Federal Specifications and Standards, and requirements specified herein:

Asphalt tile: 1/8 inch thick; SS-T-306B
Vinyl Asbestos Tile: L-T00345
Vinyl Plastic Base, Premolded: L-F-00450

b. Materials for adhesive, primer and underlayment shall be water dispersed reclaimed rubber base, heavy bodied type for all floors unless otherwise specified by manufacturer of slat block, and petroleum naphtha natural resin base type mastic for application of base. Material shall be suitable for the purpose and specific structural conditions, delivered in sealed containers bearing manufacturer's label and shall be used without adulteration or reducing. Types for each use shall be approved by the manufacturer of the flooring.

9C-03. CERTIFICATION:

a. Certificates in triplicate with accompanying test reports by an independent testing laboratory, attesting that materials proposed for use meet requirements specified, including a homogeneity test, by method and procedure similar to that for scratch test, using a one inch wide tool designed to cut concentric circles in increments of .020 inch depth. Sampling and compliance criteria shall be in accordance with LLL-T-431 for all types of floor covering, and adhesives where referenced specifications apply.

9C-04. PREPARATION:

a. Surfaces to receive flooring shall be cleaned free of dust, foreign matter, and materials not compatible with adhesives, such as sealers, hardeners, breaker compounds, and curing compounds. Concrete shall be dry and emission of moisture vapor from the slab shall be no more than 2 pounds per 1000 square feet in 24 hours. Moisture test shall be performed, for on grade slabs and suspended slabs over a moisture barrier type material, in accordance with the tile and adhesive manufacturer's instructions and shll be the referee test - quantitative (manufacturer's analysis) method; optional moisture test methods may be permitted by acceptance and certified approval of the tile and adhesive manufacturer.

b. Cracks, joints, holes and depressions in concrete floors shall be filled with underlayment, mixed and applied in accordance with flooring and adhesive manufacturer's directions, to required thickness, well compacted and allowed to become hard and dry. Concrete and underlayment surfaces shall then be power ground to a uniform, level with a smooth finish.

c. A temperature of not less than 70 degrees F. shall be maintained at least 48 hours before and during the laying of flooring. Materials shall be brought into the locations during the 48 hour period and allowed to condition at least 24 hours before installation. A minimum temperature of 55 degrees F. shall be maintained thereafter.

9C-05. DELIVERY:

a. Materials shall be delivered to the site in original unopened containers with manufacturer's name and brand clearly marked thereon, and seals intact.

9C-06. LAYING:

a. Lay flooring in accordance with manufacturer's printed directions, to true, straight lines and levels. Flooring tiles for each area shall be laid out from center lines and finished with pieces of uniform shape and size against walls, edge strips, nosings and thresholds. Tiles shall be placed squarely against each other and shall be pressed, or rubbed into the cement with a sliding motion, to insure complete contact and adhesion. Cement extruding onto the face of flooring shall be cleaned off immediately. Surfaces stained or damaged by adhesives shall be replaced by fresh material. Flooring tiles shall be thoroughly pressed into place before the cement has set (not later than one hour after flooring is laid). Keep face of flooring clean of adhesives. Vinyl type tiles shall not be rolled.

b. Flooring shall extend to backs of recesses. Holes for pipes shall be neatly cut. Scribe and fit around all built-in furniture and equipment.

c. Laying shall be deferred until all other work in the area that might cause damage to the flooring is completed.

d. Flooring in any one continuous area or that is used in replacement of damaged flooring in a continuous area shall be from the same lot and have the same hue and shade. Variation in marbling and mottling in the same area shall be kept to a minimum.

9C-07. EDGE STRIPS:

a. Provide extruded aluminum edge strips at exposed edges where flooring is terminated at door openings without thresholds and similar conditions. Strips shall be butt type, and beveled on exposed edge; top surface to finish flush with flooring. Secure strips at ends and intermediately, approximately 8 inches apart with screws.

9C-08. PREMOLDED BASE:

a. Base shall be not less than 1/8 inch thick, set on type, with extended cove at floor. Base shall be in standard length and shall include premolded, external and internal angles. Base shall be set straight and level in full bed of adhesive, with close, flush joints hermetically sealed by the adhesive.

9C-09. CLEANING:

a. Flooring shall be thoroughly cleaned, buffed and left in condition satisfactory to the Construction Engineer. Spots shall be removed by means that will not damage the surface. Solvents, wet-mopping and washing are prohibited.

9C-10. PROTECTION:

a. As soon as flooring is completed in each area, resulting debris shall be removed. Floor shall be protected with heavy building paper or traffic control, as necessary. Defects which develop, such as damaged, loose, broken or curled tiles, shall be corrected prior to final inspection.

END OF SECTION

9D THINSET TERRAZZO:

9D-01 General:

a. Scope: The work under this section of the specifications includes all labor, materials, equipment and services for all thinset terrazzo as shown on the drawings or herein specified.

9D-02 Materials:

a. Matrix: Matrix shall be a polyester composition, including primer resin and hardener, binder resin and hardener, filler, grout and hardener and sealer.

b. Marble Chips shall be no greater than size # 1.

c. Expansion Strips: Shall be as detailed, 5/8" angle type with 1/8" Black neoprene filler-metal shall be 16 gauge zinc.

d. Materials shall be delivered to job site pre-packaged and ready for unit mixing.

9D-03 Workmanship:

a. The manufacturers manual as described in Sweet's 9.19/Na. 1971 for instructions for mixing and application shall be followed implicitly in the mixing and installation of the thinset terrazzo.

b. Concrete Slab Surface Preparation:

1. Slab shall be cleaned of all dirt, grease, oil or other anti-adherents.

2. Each slab with dilute solution of 1 part muriatic acid to 4 parts water (20% solution). Acid solution shall remain on slab 10 minutes, or until foaming disc-ntinues, and shall then be washed off with water. Slab shall be allowed to dry for not less than 24 hours before installation of thinset terrazzo is begun.

3. Concrete Slab Surface Prepartion: continued. Repair and Fill: All cracks, holes and construction joints in slab shall be filled and covered with glass tape and resin binder in accordance with installation manual directions noted above.

9D-03 Workmanship: (Continued)

c. Primer: Primer shall be applied to slabs in accordance with installation manual directions after slab is dry.

d. Topping: Topping ingredients shall be blended into a homogeneous mixture in a mechanical mixer. Topping shall be troweled on to a uniform thickness, allowed to cure and then be ground and finished to a thickness of not less than 1/4". Grinding, grouting, sealing and buffing shall be in accordance with the National Terrazzo and Mosaic Associations published specifications for thinset polyester terrazzo as published in 1966, revised 11/27/67.

e. Base: Base shall be as indicated on plans and applied as in d above. Provide a radius of 1 1/2" minimum.

f. Protection: Protect all adjacent surfaces and materials from damage due to work under this section. Contractor shall be responsible for protection of floors upon completion of installation by this section.

END OF SECTION

9E PAINTING:

9E-01. GENERAL:

a. The work under this section includes all labor, materials, equipment and services required for all painting and finishing as shown on the drawings.

b. The work to be performed under this section shall include, but is not limited to, the following:

1. Painting and finishing of all exposed woodwork, interior and exterior, and of all millwork.

2. The field painting of all exposed surfaces of all ferrous metal work, including galvanized, of the building exterior and interior, in whatever location found, which is not finish painted under other sections of the specifications, specifically Miscellaneous Metal, Metal Door and Frames, Mechanical Trade Work, Structural Steel, Steel Joists, Certain Finish Hardware.

3. Painting of all exposed surfaces of masonry on the interior, except those receiving special coatings.

4. Field painting of bare and insulated pipes where exposed and of hangers, exposed steel and iron work, and metal surfaces of equipment installed under the "Plumbing", "Heating", "Air Conditioning and Ventilation" and "Electrical" Divisions of the specifications.

c. Manufacturer:

1. Except as otherwise specified, proprietary names used herein refer to products manufactured by Devoe Paint, Division of Celanese Coatings Company.

2. Similar products of the following manufacturers will be acceptable, subject to compliance with specification requriements.

Pratt & Lambert, Inc.
Martin-Senour Company
Benjamin Moore & Company
Pittsburgh Plate Glass Company
The Sherwin-Williams Company
E. I. DuPont de Nemours & Co., Inc.
Glidden Company, Cleveland, Ohio
The O'Brien Corporation
Rez Wood-Tones, Inc., Springdale, Penn.
Sanders Paints, Inc.

d. Storage of Materials: All materials used on the job shall be stored in a single place designated for storage of painting materials and equipment. Such storage place shall be kept neat and clean and all damage thereto or its surroundings shall be made good. Any soiled or used rags, waste and trash must be removed from the building every night, and every precaution taken to avoid the danger of fire.

e. Inspection of Surfaces: Before starting any work, surfaces to receive paint finishes shall be examined for defects which cannot be corrected by the procedures specified herein under "Preparation of Surfaces" and which might prevent satisfactory painting results. Work shall not proceed until such damages are corrected.

f. Job, Weather & Temperature Conditions:

1. Maintain temperature in building at constant 65°F, or above, and provide adequate ventilation for escape of moisture from building, in order to prevent mildew, damage to other work, and improper drying of paint.

2. Once painting has commenced, provide constant temperature of 65°F., or above, and prevent wide variations in temperature which might result in condensation on freshly painted surfaces.

3. Before painting is started in any area, it shall be broom cleaned and excessive dust shall be removed from all areas to be painted.

4. After painting operations begin in a given area, broom cleaning will not be allowed; cleaning shall then be done only with commercial vacuum cleaning equipment.

5. Adequate illumination shall be provided in all areas where painting operations are in progress.

9E-02. MATERIALS:

a. Paint Materials:

1. All materials used on the work shall be as specified in the "Painting Schedule" in brand and quality, except as provided for previously concerning other approved manufacturer's products.

2. All paints, varnishes, enamels, lacquers, stains, paste fillers and similar materials must be delivered in the original containers, with the seals unbroken and labels intact, and with the manufacturer's instructions printed thereon.

8. Coverage and hide shall be complete. When color, stain, dirt of undercoats show through final coat of paint, the surface shall be covered by additional coats until the paint film is of uniform finish, color, appearance and coverage, at no additional cost to the Owner.

b. Preparation of Surfaces:

1. General:

a. Surfaces shall be clean, dry and protected from dampness.

b. Surfaces shall be smooth, even and true to plane.

c. Surfaces shall be free of any foreign material which will adversely affect adhesion or appearance of applied coating.

d. Mildew shall be removed and neutralized by scrubbing affected areas with a solution made by adding 2 oz. of Tri-Sodium Phosphate type cleaner (Dirtex, Spic 'n Span) and 8 oz. of Sodium Hypochloride (Chlorox) to 1 gallon of warm water. Use a scouring powder if necessary to remove mildew spores. Rinse with clear water and allow to dry before painting.

2. Wood:

a. Sandpaper to smooth and even surface, then dust off.

b. Before priming coat is applied, touch up all knots, pitch streaks and resinous sapwood with shellac, four (4) pound cut.

c. After priming coat has dried, putty all nail holes, cracks, open joints and other defects. Putty shall be colored to match stain or paint.

3. Concrete, Masonry:

a. Patch large openings and holes with Portland Cement Mortar and finish flush with adjacent surface. After priming, fill any remaining small holes with Swedish putty made by mixing dry whiting with prime coat of paint.

b. Concrete floors, clean with paint thinner. Floors shall be dry and free from grease, oil or other foreign material.

c. Remove Form-oil from poured-in-place concrete by washing concrete with Xylol.

d. These surfaces shall be allowed to dry, usually 60 to 90 days of moderate weather, before painting.

3. All painting materials, such as linseed oil, shellac and turpentine, shall be pure and of highest quality. They shall bear identifying labels on the containers, with the manufacturer's instructions printed thereon.

4. Paint shall be well ground, shall not settle, cake or thicken in the container, shall be readily broken with a paddle to a smooth consistency, and shall have easy brushing properties.

5. Paint shall arrive on the job ready-mixed, except for tinting of undercoats and possible thinning.

9E-03. APPLICATION AND WORKMANSHIP:

a. Workmanship, General:

1. Only skilled mechanics shall be employed. Application may be by brush or roller only.

2. Equipment shall be kept clean and in proper condition.

3. Do not use same tools for application of paint on smooth surfaces that were originally used to paint concrete block.

4. All materials shall be mixed, thinned, modified and applied only as specified by the manufacturer's directions on the container.

5. Protect this work at all times, and also protect all adjacent work and materials by suitable covering or other method during progress of this work. Upon completion, remove all paint and varnish spots from floors, glass and other surfaces. Remove from the premises all rubbish and accumulated materials of whatever nature not caused by others and leave this part of the work in a clean condition.

6. Remove and protect hardware, accessories, device plates, lighting fixtures, factory finished work, and similar items; or provide ample in-place protection. Upon completion of each space, replace all removed items. This work shall be done only by skilled mechanics, using tools commensurate with the work to be done.

7. All materials shall be applied under adequate illumination, evenly spread and smoothly flowed on with the proper type and sizes of brushes, roller covers, bucket grids and spray equipment to avoid runs, sags, holidays, brushmarks, air bubbles and excessive roller stipple.

No painting shall be done until surfaces are tested by moisture meter and shown to be within the acceptable limits of the specified manufacturer and safe to paint.

4. Ferrous Surfaces:

   a. Remove dirt and grease with solvent and wipe dry with clean cloths.

   b. Remove rust, mill scale and defective paint down to sound surface, using scraper, sandpaper or wire brush. Grind to remove shoulders at edge of sound paint to prevent flaws from photographing through finish coats.

   c. Touch up all bare metal and damaged shop coats with specified rust-inhibitive primer.

5. Galvanized Surfaces:

   a. Remove dirt and grease with mineral spirits and wipe dry with clean cloths.

   b. All galvanized steel surfaces shall be pretreated with proprietary acid-bound resinous or crystalline zinc phosphate preparations, prior to painting, unless manufacturer of paint used directs otherwise.

9E-04. FORMULAS:

a. Exterior:

1. Concrete*: 2 Coats-Devoe De-Vo-Ko Vinyl Exterior Masonry Paint. (Add 1 quart of Devoe Mixing Liquid to each gallon of first coat of paint.)

   *Concrete not otherwise finished.

2. Ferrous Metal:
   1 coat - Devoe Ready-Mixed Red Lead No. 20
   2 coats - Devoe All-Weather Exterior

3. Galvanized Metal:
   1 coat - Devoe Zinc-Dust Primer and Finish
   2 coats - Devoe All-Weather Exterior

4. Parking Lines:
   1st coat - SW Sher-Glide Traffic Marking Paint.

5. Exterior Wood: (Trim)
   1st and 2nd coats - Cabot's Creosote Bleaching Oil #241

b. Interior:

1. Concrete Masonry Units - Flat Finish - Filled:

1 coat - Devoe 8029 Bloxfill, tinted.
1 coat - Devoe Polymerized Wondertones.

2. Ferrous Metal Work - Semi-Gloss: All doors, frames, non-galvanized piping, exposed beams, angle frames and other miscellaneous items shall be given:
1 coat - Devoe Ready-Mixed Red Lead No. 20
2 coats - Devoe Velour - Semi-Gloss.

3. Galvanized Metal Work - Semi-Gloss Finish:
1 coat - Devoe Vinyl Primer (Pigmented)
2 coats - Devoe Velour Semi-Gloss Enamel.

4. Insulated Pipe - Flat Finish: All exposed insulated pipe covering shall be given:
1 coat - Devoe 8014 Vinyl Primer
1 coat - Devoe Velour Semi-Gloss Enamel.

5. Wood-Semi-Gloss Enamel Finish:
1 coat - Devoe 8030 Super Enamel Undercoat.
2 coats - Devoe Velour Semi-Gloss Enamel.

6. Wood - Satin Finish (Satin or Rubbed):
1 coat - Devoe Wonder Woodstain
1 coat - Devoe Quick-Drying Wonder Woodseal
1 coat - Devoe Wonder Wood Varnish Satin

END OF SECTION

10B Signs

10B-01 (General)

a. The letters on the existing building shall be removed and reinstalled on this new building as shown on the drawings.

END OF SECTION

10C TOILET ACCESSORIES

10C-01. GENERAL:

a. The work under this section includes all labor, materials, equipment and services required to furnish and install all toilet accessories as shown on the drawings.

10C-02. MATERIAL:

a. Paper Towel Dispensers: Furnish and install one paper towel dispenser for each restroom. Dispensers shall be mounted on the wall as directed. Dispenser shall be Bobrick Corp., #B-262, or equal.

b. Framed Mirrors: Shall be welded square cornered, mitered, 20 gauge minimum, Stainless Steel with concealed theft proof mounting. Mirrors shall be Bobrick #B165-1824 or equal.

c. Soap Dispenser: Shall be stainless steel. Separate wall plate prevents theft. 12 oz. capacity. Dispenser shall be Parker #10-L or equal.

10C-03. WORKMANSHIP:

a. Install all toilet accessories as directed.

END OF SECTION

14A Elevator

14A-01. General:

a. This work under this section includes all labor, material equipment and services required to furnish and install a freight elevator as shown on drawings.

b. The following specifications by Dover Elevator Company are hereby made a part of these specifications.

END OF SECTION

SCOPE: This proposal is intended to cover the complete furnishing and installing of One (1)

Dover Oildraulic Freight Elevator

except as specified under "Work Not Included". All work shall be performed in a workmanlike manner and is to include all work and material in accordance with the drawings and as specified herein. In all cases where a device or part of the equipment is herein referred to in the singular number, it is intended that such reference shall apply to as many such devices as are required to complete the installation.

All work shall be performed in accordance with the latest revised edition (as of the date of this proposal) of the American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks (ANS A-17), the National Electrical Code, and/or such State and Local codes as may be applicable. Should, subsequent to the date of this proposal, changes be made in any code, or should rulings by any code enforcing authorities extend the application of the code, the work and materials necessary to make the installation comply with such changes shall be performed as an addition to the contract price.

DRAWINGS: We shall, after structural and architectural drawings are furnished to us, prepare drawings showing the general arrangement and loads of the elevator equipment. These drawings shall be approved and the hoistway size guaranteed before proceeding with fabrication and installation of the elevators.

PAINTING: All exposed metal work furnished by us, except as otherwise specified, shall be properly painted after installation.

PERMITS, TAXES AND LICENSES: All applicable sales and use taxes, permit fees and licenses imposed upon us as an Elevator Contractor as of the date of this proposal, are included in the contract price. The Purchaser agrees to pay, as an addition to the contract price, the amount of any additional taxes, fees or other charges exacted from the Purchaser or the Company on account thereof, by any law enacted after bids are taken.

TEMPORARY SERVICE: Should the service of any elevator be required before completion and final acceptance, the Purchaser agrees to sign our temporary acceptance form and be bound by the terms and conditions thereof. A copy of this form will be furnished on request.

ACCEPTANCE OF INSTALLATION: Upon notice from us that the installation of the elevator has been completed, the Purchaser will arrange to have present at the installation site, a person duly authorized to make the final inspection and to provide a written acceptance. The date and time that such person will be present at the site shall be as mutually agreed, but shall not be more than ten business days after the date of our notice to you, unless we both agree to a certain date thereafter. Such final inspection and certificate of acceptance shall not be unreasonably delayed or withheld.

TITLE AND OWNERSHIP: We retain title to all equipment supplied by us under this contract and a security interest therein, (which, it is agreed, can be removed without material injury to the real property) until all payments under the terms of this contract, including deferred payments and any extensions thereof, shall have been made. In the event of any default by you in any payment, or under any other provision of this contract, we may take immediate possession of the equipment and enter upon the premises where it is located (without legal process) and remove such equipment or portions thereof irrespective of the manner of its attachment to the real estate or the sale, mortgage, or lease of the real estate. Pursuant to the Uniform Commercial Code, at our request, you agree to join with us in executing any financing or continuation statements which may be appropriate for us to file in public offices in order to perfect our security interest in such equipment.

MAINTENANCE SERVICE: We will furnish our standard maintenance and call-back service for a period of 3 Months on each elevator after it is completed and placed in operation. This service shall consist of periodic examinations of the equipment, adjustments, lubrication, cleaning, supplies and parts to keep the equipment in proper operation, except such adjustments, parts or repairs made necessary by abuse, misuse or any other causes beyond our control. All work will be done by trained employees during regular working hours of the trade.

WARRANTY: We warrant the equipment installed by us under this contract against defects in materials and workmanship for a period of one year from the date each elevator is completed and placed in operation. This warranty is in lieu of any other liability for defects. We make no warranty of merchantability and no warranties which extend beyond the description in this contract, nor are there any other warranties, express or implied, by operation of law or otherwise. Like any piece of fine machinery, this equipment should be periodically inspected, lubricated, and adjusted by competent personnel. This warranty is not intended to supplant normal maintenance service and shall not be construed to mean that we will provide free service for periodic examination, lubrication, or adjustment due to normal use, beyond that included in the contract; nor will we correct, without charge, breakage, maladjustments or other trouble arising from abuse, misuse, improper or inadequate maintenance, or any other causes beyond our control. In the event of a claim, you must give up prompt written notice, and provided all payments due under the terms of this contract have been made in full, we shall, at our own expense, correct any proven defect by repair or replacement. We will not, under this warranty, reimburse you for cost of work done by others; nor shall we be responsible for the performance of equipment to which any revisions or alterations have been made by others.

We shall in no event be liable for damages or delay nor for any consequential, special or contingent damages for breach of warranty.

~~If there is more than one unit in this contract, this section shall apply separately to each unit as completed and placed in operation.~~

WORK NOT INCLUDED: This proposal does not include the following work, and is conditioned on the proper performance of such work by the General Contractor or other Sub-contractors.

A legal hoistway, properly framed and enclosed, and including a pit of proper depth, provided with ladder, drains, lights, access doors, and waterproofiing, as required. Suitable machine room, adequate for the elevator equipment, including floors, gratings, foundations, lighting, ventilation and heat to maintain the room at a temperature of 50° F. minimum to 100° F. maximum.

Adequate supports and foundations to carry the loads of all equipment, including supports for guide rail brackets ~~and machine beams or overhead sheaves, if furnished). If adjacent hoistways are utilized, divider beams at suitable points shall be provided for guide rail bracket support.~~ Suitable connections from the power mains to each controller, ~~to motor generator set starter~~, signal equipment feeders as required, including necessary circuit breakers and fused mainline disconnect switches.

Outlets at the center of the hoistway for lighting in the car. Electric power, without charge, for construction, testing, and adjusting, of the same characteristics as the permanent supply.

Door frames with extensions to beam above if required on hoistway side and sills for freight elevators, including finish painting of these items.

Cutting of walls, floors, etc., and removal of such obstructions as may be necessary for proper installation of the elevator. Setting of anchors or sleeves. Pockets or blockouts for signal fixtures.

~~All sill supports, including steel angles where required, and sill recesses and the grouting of door sills and hoistway frames after installation.~~

All painting, except as otherwise specified.

Provide temporary enclosures or other protection from open hoistways during the time the elevator is being installed.

Proper trenching and backfilling for any underground piping or conduit.

DESCRIPTION OF EQUIPMENT:	One Dover Freight Elevator
CONTROL:	Oildraulic
CAPACITY:	5,000 Pounds
SPEED:	50 Feet Per Minute
OPERATION:	Single Automatic
CAR SIZE:	8'-4" wide by 10'-0" deep
TRAVEL:	13'-9"
POWER SUPPLY:	208 Volts, 3 Phase, 60 Cycles
MACHINE LOCATION:	Adjacent to Lower Landing
STOPS:	Two
OPENINGS:	Two Front, Interior One Rear, Exterior
HOISTWAY DOORS: (SIZE & TYPE)	Bi-Parting Front - 8'-0" wide by 7'-6" high Rear - 8'-0" wide by 11'-0" high
DOOR OPERATION:	Manual
CAR ENCLOSURE:	Steel
SIGNALS:	Door open and alarm bells In-Use light
SPECIAL FEATURES:	Exterior door to be weatherstripped, and provided with cylinder lock

PLATFORM AND SLING: The platform shall have a fabricated frame of formed and structural steel shapes, gusseted and rigidly welded. The finish top floor shall be non-skid steel
The platform shall be designed for Class A loading as defined by the ANS A-17 Code.

The sling shall consist of heavy steel channel stiles properly affixed to a steel crosshead and bolster, with adequate bracing members, to remove all strain from the car enclosure.

CAR ENCLOSURE: The car shall be enclosed with #14 gauge steel panels on unopened sides to a height of 7 feet 6 inches and be painted with manufacturer's standard color and type of machine enamel.
Vertical Rising Car Gates will be furnished on each open end of the car.

A #14 gauge solid metal top shall be provided over the car, with approved safety hinged section.

CAR LIGHT: A suitable light fixture shall be furnished in the car controlled by a key operated switch in the car operating panel.

GUIDES AND FASTENINGS: Guides for car (~~and counterweight~~) shall consist of planed steel tees, erected plumb, and securely fastened to the hoistway framing by heavy steel brackets. Guide rails for the car shall have a section of not less than 15 pounds per lineal foot ~~(and those for the counterweight shall be of a section not less than ------ pounds per lineal foot)~~. The ends of all guides shall be tongue and grooved, forming matched joints and connected with steel splice plates. The car stile will be fitted at top and bottom with machined guide shoes of the adjustable swivel type.

SINGLE AUTOMATIC OPERATION: The car shall be operated by buttons in the car marked to correspond with the respective landings served, and by single "Call" buttons at each hoistway opening. The momentary pressure of any button shall operate the car, if all car gates ~~or doors~~ and all hoistway doors are closed, which shall travel to its destination in the direction chosen without interference. An emergency stop button in the car operation panel shall enable the operator to stop the car at will. A light in each hall station shall indicate when the car is in use.
SPECIAL REAR ZONING
UP-DOWN OPERATION: The elevator shall be operated by "up-down" buttons located in the car ~~and at each hoistway opening.~~ Constant pressure on any button operates the car, if all car gates are closed ~~and all hatch gates or doors are closed and locked~~, the elevator shall travel in the direction chosen without interference until the operating button is released, or until the car reaches terminal landing ~~where limit switch shall automatically stop the car. An emergency stop switch shall be provided in the car, which shall prevent operation of the elevator at the will of the car operator.~~ or a maximum of 4'-0" above the rear landing.
ALARM BELL: An emergency alarm bell shall be located in conformance with ANS A-17 Code requirements, and connected to a plainly marked pushbutton in the car operating panel.

POWER UNIT: (Oil Pumping and Control Mechanism) shall be compactly and neatly designed with all of the components listed below combined in a self-contained unit; structural steel outer base with tank supports; floating inner base for mounting motor-pump assembly; overhead oil reservoir with tank cover and controller compartment with cover; metal drip pan; an oil-hydraulic pump; an electric motor; an oil control unit with the following components built into a single housing; a high pressure relief valve; a check valve; an automatic unloading up start valve; a lowering and leveling valve; and a magnetic controller.

The pump shall be especially designed and manufactured for oil-hydraulic elevator service. It shall be of the positive displacement type, inherently designed for steady discharge with minimum pulsations to give smooth and quiet operation. Output of pump shall not vary more than 10% between no load and full load on the elevator car.

Drive shall be by multiple V-belts and sheaves of number and size to insure maximum factor of safety ~~or by direct coupling.~~

Motor shall be especially designed for oil-hydraulic elevator service, of standard manufacture, and of duty rating to comply with herein specified speeds and loads.

Oil Control Unit shall consist of the following components, all built into a single housing. Welded manifolds with separate valves to accomplish each function will not be acceptable under this specification. All adjustments shall be accessible and shall be made without removing the assembly from the oil line:

Relief Valve shall be externally adjustable, and shall be capable of bypassing the total oil flow without increasing back pressure more than 10% above that required to barely open the valve.

Up Start and Stop Valve shall be externally adjustable, and designed to bypass oil flow during start and stop of motor pump assembly. Valve shall close slowly, gradually diverting oil to or from the Jack Unit, insuring smooth up starts and up stops.

Check Valve shall be designed to close quietly without permitting any perceptible reverse flow.

Lowering Valve and Leveling Valve shall be externally adjustable for drop-away speed, lowering speed, leveling speed and stopping speed to insure smooth "down" starts and stops. ~~The leveling valve shall be designed to level the car to the floor *in the direction the car is traveling*.~~

Electric controller shall be of the full magnetic type, with silver to silver contacts on all relays and contactors. Thermal overload relays to be provided to protect the motor. All component switches to be mounted in a steel panel designed for wall or floor mounting.

OIL VISCOSITY CONTROL: Provide complete hydraulic and electronic control which shall maintain all of the hydraulic fluid in the reservoir, pump and control valve at a minimum temperature of 100° F. at all times. If the oil temperature drops below this preset minimum, the elevator will be dispatched automatically to the lowest terminal floor at which point the pump shall bypass oil in the system without car motion until the preset temperature is reached. Normal response to passenger demand will not be affected by this control. Resistance type heating elements do not meet the intent of this specification.

JACK UNIT: The jack unit shall be designed and constructed in accordance with the applicable requirements of the ANS A-17 Code. It shall be of sufficient size to lift the gross load the height specified and shall be factory tested to insure adequate strength and freedom from leakage. No brittle material, such as grey cast iron, shall be used in the jack construction.

The jack unit shall consist of the following parts; a plunger of heavy seamless steel tubing accurately turned and polished; a stop ring shall be electrically welded to the plunger to positively prevent plunger leaving the casing; an internal guide bearing; packing or seal of suitable design and quality; a drip ring around cylinder top; a cylinder made of steel pipe and provided with a pipe connection and air bleeder. Brackets shall be welded to the jack cylinder for supporting the elevator on pit channels.

HOLE FOR JACK UNIT: This Contractor shall include in his bid the sum of $687.00 for digging the cylinder hole and furnishing auxiliary casing, if required.

The allowance is based on the Elevator Contractor encountering soil free from rock, boulders, building construction members, sand, water, quicksand, underground caves or any other obstruction or unusual conditions when installing the jack unit. Should such obstructions or unusual conditions be encountered, the General Contractor shall be notified immediately and written authorization to proceed with the excavation shall be obtained by the Elevator Contractor. The contract price shall be increased by the amount of the additional labor at Elevator Contractor's usual billing rates, and the actual cost of any additional materials plus 15%.

JACK UNIT PROTECTION: The casing shall be double wrapped with an approved coating designed to protect it from electrolytic and chemical corrosion. Any underground piping shall be similarly protected.

WIRING, PIPING AND OIL: All necessary wiring shall be furnished and installed in the hoistway in accord with the National Electrical Code. All necessary pipe and fittings to connect the power unit to the jack unit and oil of the proper grade shall be furnished.

MAINLINE STRAINER: A mainline strainer of the self-cleaning type, equipped with a 40 mesh element shall be furnished and installed in the oil line. The unit will be compact in design and be rated at a minimum of 400 P.S.I. working pressure.

AUTOMATIC GUIDE RAIL LUBRICATORS: Lubricators shall be provided and mounted on top of upper guide shoes. Wool felt wiper shall apply an even, uniform flow of oil which shall thoroughly lubricate faces of guide rail from a leakproof oil reservoir.

FAILURE PROTECTION: The electrical control circuit shall be designed so that if a malfunction should occur, due to motor starter failure, oil becoming low in the system, or the car failing to reach a landing in the up direction within a pre-determined time, the elevator car will automatically descend to the lowest terminal landing. If power operated doors are used, the doors will automatically open when the car reaches that landing to allow passengers to depart. The doors will then automatically close and all control buttons, except the "door open" button in the car station, shall be made inoperative.

The malfunction should then be corrected and the elevator placed back in service through the mainline disconnect switch.

AUTOMATIC TERMINAL LIMITS: Electric limit switches shall be placed in the hatchway near the terminal landings and be designed to cut off the electric current and stop the car should it run beyond either terminal landing.

AUTOMATIC SELF-LEVELING: The elevator shall be provided with a self-leveling feature that will automatically bring the car to the floor landings. This self-leveling shall, within its zone, be entirely automatic and independent of the operation device and shall correct for overtravel or undertravel. The car shall also be maintained approximately level with the landing irrespective of the load.

BUFFERS: Substantial buffers under car ~~and counterweight~~ shall be furnished and installed in the elevator pit. They shall be mounted on continuous channels fastened to the elevator guide rail or securely anchored to the pit floor and substantial extensions will be provided, if required. Buffers shall comply with ANS A-17 Code requirements.

CAR TOP INSPECTION STATION: A car top inspection station with an "emergency stop" switch and with constant pressure "up-down" direction buttons shall make the normal operating devices inoperative and give the inspector complete control of the elevator.

DOOR OPEN BELL: A bell shall be installed on the car. It shall be connected to the direction buttons in the car and landing pushbutton stations, so arranged as to ring when any button is pressed if any gate or door is open.

MANUAL DOOR OPERATION: The hoistway doors and car gate shall be equipped with suitable hand latch and web strap closers for manual operation.

INTERLOCKS: Each hoistway entrance shall be equipped with an approved type interlock tested as required by Code. The interlock shall be designed to prevent operation of the car away from the landing until the doors are locked in the closed position as defined by Code and shall prevent opening the doors from any landing on the corridor side unless the car is at rest at that landing. Unlocking devices required by the ANS A-17 Code shall be provided to permit authorized persons to gain access to the hoistway.

~~RETIRING~~ CAMS: ~~Retiring~~ cams as required by ANS A-17 Code to be furnished to operate in conjunction with the door interlocks.

HOISTWAY DOORS: The Elevator Contractor shall furnish and install a bi-parting, counterbalanced, vertical sliding, hoistway door at each landing, for frame opening 8'-0" wide by * high. The doors shall be of substantial metal plate or wood core construction. The upper edge of each lower door shall have a truckable sill which shall support trucking loads equal to the capacity of the elevator and approved means of holding the sill level independent of the suspension chains when the doors are fully opened. The lower edge of each upper door shall have a safety meeting rail which will close the space between the door sections when closed. The upper section of each door shall have a 4" by 9" glass vision panel. Each door shall be of labeled construction as described by the ANS A-17 Code.

* front 7'-0"
rear 11'-0"

SECTION 15A - PLUMBING

15A-01. GENERAL:

a. All plumbing fixtures, equipment, piping and accessories to provide the entire plumbing system indicated on the contract drawings or specified shall be installed complete, tested, adjusted, and put in good operating condition.

b. The plumbing drawings are generally diagrammatic, and do not show every fitting and detail. The Contractor is to install the piping and equipment so as to avoid conflict with other work or weakening of the building structure.

c. Fixtures shall be installed at the locations indicated on the architectural drawings. Equipment and fixtures shall be installed in accordance with the manufacturer's current standard published installation recommendations.

15A-02. UTILITY CHARGES:

a. All charges of the municipality or of utilities companies for any service such as, but not limited to, water service connections, water meters, sewer connections, street and sidewalk repairs required for this work are to be paid by the Contractor and shall be included in the contract cost.

15A-03. PLUMBING CODE:

a. The Southern Plumbing Code Part II 62-63 shall govern the installation of all work and is incorporated into and made a part of the contract documents by reference. The Architect shall be the "Administrative Authority" defined in paragraph 1.2 of the Southern Plumbing Code. The Southern Plumbing Code shall govern the minimum requirements only, in as much as the drawings and specifications may call for sizes and weights of pipe, quality of materials, and quality of workmanship and methods of construction which are in excess of the Plumbing Code, and these requirements of the contract documents shall apply to all on-site work but not apply to the off-site sewer work.

15A-04. APPROVAL OF PLUMBING MATERIALS:

a. Submit seven copies of catalog data on all equipment and fixtures for approval before placing orders; only approved items may be installed.

15A-05. PROTECTION OF PLUMBING MATERIAL:

a. Contractor shall protect his work at all stages of construction. Pipe openings shall be protected against dirt and trash with plugs or caps. Water piping must be stored on racks above the ground and kept clean. Fixtures shall be protected against scratches and breakage. Work damaged prior to final acceptance must be replaced by the Contractor without extra cost to the Owner. The use of any plumbing fixtures before water is available is prohibited. Do not install closet seals until after painting work is complete.

15A-06. EXCAVATION OF PIPE TRENCHES AND SUPPORT OF BURIED PIPING:

a. Excavation for underground piping shall be made to the line of grade and the pipe laid on firm soil; provide recesses for the bells. If the trench bottom is rock, it shall be excavated 4" deeper than the bottom of the pipe and filled with sand or clay to the line of grade. Backfill for the portions of pipe trenches that pass under wall footings shall consist of concrete and a sleeve shall be installed on the pipe. Backfill must be earth free of stone or trash and shall be uniformly spread in layers not more than 6" thick, moistened as required, and compacted by hand tamping until there is at least 18" of cover over the pipe; mechanical tampers may be used to complete the backfill to grade.

b. Trenches for outside piping shall be deep enough to permit 24" minimum cover; sewers under drives to have 36" cover, except cast iron sewers may have less cover when necessary for proper grade.

c. Provide 16"x18"x6" concrete pad flush with finish grade to protect each valve box and surface cleanout for outside piping. Sewer piping in filled ground shall be provided with concrete support close to the hub of every length of pipe, consisting of 8" minimum diameter rough concrete "post hole" pier extending down to firm support in undisturbed earth.

15A-07. HANGERS AND SUPPORTS:

a. All piping, except underground, shall be securely supported by hangers, brackets and clamps suitable to the job conditions. Hangers for horizontal piping shall be ring type equal to Grinnell Fig. 104 for drainage piping and Fig. 104 or 97 for other piping, unless designated otherwise on the drawings. Hangers shall have steel rods hung from the building structure with concrete inserts or expansion shields, or with lag screws in wood structural members. Rod sizes shall be not less than 3/4" diameter for 6" pipe, 5/8" for 5" and 4" pipe, 1/2" for 3" and 2-1/2" pipe, and 3/8" for 2" and smaller pipe. Hanger parts touching copper water pipe shall be copper plated. Elcen, Fee & Mason, and Gabler are other acceptable makes of hangers.

b. Hangers on horizontal pipe shall be spaced not over 5' apart for cast iron pipe, 6' for copper tubing smaller than 2", and 10' for other pipe. Cast iron risers shall be supported by concrete pads at the base and by steel clamps or approved equal method at each upper floor.

c. All fixtures and equipment must be securely supported by substantial brackets and bolts. Where fixtures are supported from partitions, thru bolts with steel plates shall be installed to distribute the load. The use of wood plugs as substitutes for expansion shields will not be allowed.

15A-08. SLEEVES AND ESCUTCHEONS:

a. See details on the drawings for requirements on sleeves, boxes, and sealing around pipe risers. Chromium plated wall escutcheons, floor and ceiling plates shall be installed on all exposed bare and insulated pipes in finished rooms. Cast iron pipe sleeves at least 2" larger diameter than the pipe shall be installed for all pipe which extend thru walls below grade or thru or under footings; poured lead of the same grade used for soil pipe joints shall be used for waterproof caulking of the pipe in these sleeves where the pipe extends into any building area that is below grade.

15A-09. FLASHINGS:

a. Vent terminals and roof drains shall be flashed water tight at the roof with 4 lbs/sq. ft. sheet lead caulked into a hub or sealed by a clamping ring and extending flat on the roof for at least 7" on all sides; 4 lb. lead boot flashing may be used on 3" and larger vents.

15A-10. INSTALLATION OF PIPING:

a. All piping shall be installed straight, with uniform slope and alignment, and supported to prevent sagging; drainage piping shall grade 1/4 inch per foot minimum unless noted otherwise. Water piping shall be arranged to permit drainage; provide drain valves at low points.

b. Pipe ends shall be cut off square and reamed. Before assembly all pipe shall be thoroughly cleaned of all dirt, scale and chips. Nipples shall be the same material as the piping in which they are installed. Pipe threads shall be U. S. Standard, clean, and made up with approved pipe joint compound on threads of pipe only.

15A-11. SOLDER AND SOLDERING:

a. Solder shall be 95% tin - 5% antimony. The procedure for soldering of copper tubing must be demonstrated on sample joints by each mechanic and approved by the Architect before any soldered joints are installed. In addition to qualification samples, one joint designated by the Architect shall be cut out of the water pipe installed by each mechanic doing the soldering, for inspection and testing; if test joints are not satisfactory, additional samples must be

cut out. Soldering procedure shall comply with the recommendations of the solder manufacturer.

15A-12. TESTS OF PIPING AND CORRECTION OF LEAKS:

a. No piping shall be concealed until after it has been tested and proved tight by the Contractor, and inspected and approved by the local authority.

b. Inside drainage system piping shall be tested with water under a head of not less than 10 ft., except the uppermost 10 ft. which shall be tested by filling to the top of the stacks; piping may be tested in sections. Water pressure shall be maintained for at least 15 minutes before the joints are inspected for seepage.

c. Outside sewer lines shall be given a water flow test for at least 5 minutes at a flow rate of not less than 5 GPM before backfilling.

d. Water piping shall be tested at 125 psi, using potable water; test pressure shall be maintained for at least 30 minutes with loss.

e. Leaks shall be corrected by replacement of defective materials, leaking solder joints must be taken apart, cleaned and remade; threaded joints must be tightened, not caulked, caulking or doping of holes or cracks will not be accepted. Piping must be re-tested after leaks are repaired.

15A-13. WATER TESTS AND STERILIZATION OF PIPING:

a. The Contractor shall obtain State Health Department tests of water from fixtures. Samples shall be taken in sterile bottles from fixtures designated by the Architect, and the test reports shall be submitted to the Architect. If any of the samples fail to meet the State Health Department standards for potable water, the water piping system from which sample was obtained shall be sterilized for 6 hours with a 50 parts per million solution of chloride, then flushed, and the test procedure shall be repeated. Two samples per building shall be taken.

15A-14. CLEANOUTS:

a. Cleanouts shall be installed at all locations indicated on the plans and details, at all locations required by the Plumbing Code, which include the following:

1. Each fixture trap shall have a brass trap screw, except where integral with the fixture or where the trap is buried or encased in masonry.

2. A cleanout shall be installed at or near the foot of each vertical waste or soil stack.

3. A cleanout shall be installed near the junction of the building drain and building sewer or a cleanout with "Y" branch inside the building wall.

4. Cleanouts shall be installed at each change of direction of the building drain greater than 45 degrees.

5. Cleanouts shall be not more than 50 feet apart in horizontal drainage lines of 4" nominal diameter or less, and not more than 100 feet apart for larger pipes, except where manholes are installed, the spacing shall not exceed 150 feet.

6. Pipe cleanouts shall be the same size as the pipes up to 4" and not less than 4" for larger piping. Manholes shall be considered as cleanouts. All cleanouts must be accessible.

15A-15. PIPING MATERIALS:

a. Piping shall be standard products of U. S. manufacturers as listed below and as noted on the drawing.

1. Outside water piping 3" and larger: Cement lined cast iron mechanical joint water main pipe WW-0-421a. (ASA A21.11-1953), with cast iron cement lined mechanical joint 250 lb. fittings.

2. Outside water piping 2-1/2" and smaller: Galvanized steel schedule 40 pipe with screwed 300 lb. (cold water rating) galvanized malleable iron fittings, ASA-B16.3 for the mains. The branch service pipes from mains to buildings shall be soft temper type K copper tubing with wrought copper fittings, ASA B16.22-1951.

3. Water piping in the building: Type L copper tubing with wrought copper solder type fittings B-16.22-1951.

4. Sanitary drainage piping inside the building: 2" and larger pipe shall be CS 188-59 coated cast iron soil pipe with coated cast iron bell and spigot soil pipe fittings, unless noted "Copper". Cast iron pipe buried under the floor and buried outside within 5 feet of building shall be service weight. Joints in cast iron soil pipe shall be packed with oakum and poured with molten lead not less than 1" deep, and caulked tight. Drainage piping 1 1/2" and smaller, and where noted "copper" shall be DWV copper tubing with wrought copper solder type drainage fittings and with brass caulking adapters and threaded adapters for connecting to other piping.

5. Storm drainage piping in or under the building: Cast iron as specified for sanitary drainage piping.

6. Cleanout plugs: Extra heavy brass to comply with Federal Specification WW-P-401; coat threads with graphited water pump grease when installing.

7. Outside sanitary and storm sewers: Vitrified clay sewer pipe and fittings with PVC plastic couplings, ASTM C425, except cast iron soil pipe shall be used for surface cleanout connections and where noted C. I. or required by the Code. Oconee "Wedge-Lock" and Dickey PVC couplings are acceptable makes of clay pipe and couplings. Pipe for the off-site sanitary sewer stream crossing shall be cast iron water main with mechanical joint fittings as specified for outside water piping.

8. Fixtures waste connections to roughing: Cast iron floor flanges not less than 1/4" thick and 2" caulking depth for floor outlet water closets, asbestos or wax setting for gaskets and brass bolts for closets, threaded brass adapter nut with tapered lead ring to form ground joint type connection for waste tubing of lavatories, and sinks.

9. Dielectric unions and bushings: Mayco plastic insulating bushings of "Plaskon" 8200 nylon shall be installed in the tees where copper tubing branches connect to buried iron and steel water mains. Mayco armored type nylon unions shall be installed in every piping connection at the water heaters.

15A-16. ACCESS DOORS:

a. Access doors for valves and tub connections in concealed spaces are specified in another section of the specifications.

15A-17. PIPE COATING:

a. Water piping that rises throught a concrete slab on ground shall be coated for a length of not less than 5 feet measured from the top of the slab down along the pipe. Copper tubing cold water pipe that is buried within 3 feet of iron or steel pipe or electric conduit shall be coated. This applies to the first 3 feet of a copper branch from a cast iron or steel water main and to tubing crossing a buried conduit. The coating is to prevent galvanic action and shall be Roskote #612XM or Bitumastic #50, applied as a glove coat not less than 1/32 inch thick.

15A-18. VALVES:

a. Valves, valve boxes and hydrants shall be as follows: Acceptable makes of valves are: Crane, Hammond, Mueller, Nibco, or Stockham.

1. Valves for outside water piping 3" and larger: AWWA approved 175 lb. mechanical joint iron body bronze fitted stationary stem gate valves equal to Mueller Fig. A-2480-20.

2. Valve boxes: Cast iron adjustable valve boxes equal to Mueller or Alabama Pipe Co. shall be installed for all underground valves and cocks. Buried valves shall be fitted with operating nuts and keys for use at grade level. Valve boxes shall have removable cover marked "Water".

3. Valves 2-1/2" and smaller in outside piping: Screwed and red brass body non-rising stem 125 lb. gate valves equal to Nibco #56.

4. Valves 2" and smaller for interior use: Non-rising stem brass body solder-end gate valves unless noted otherwise, and shall be equal to Nibco "Husky" #722 or Nibco 125 lb #756 gate valves. Angle valves shall be 125 lb. brass body equal to Nibco #732.

5. Stops: Nibco "Husky" pattern #65 or #625 globe type, or #677 angle type. Stops shall not be used where valves are indicated.

6. Wall hydrants: Prior Brass Manufacturing Co. non-freeze No. C-134 or Woodfood No. 12 3/4", 1/2" all brass construction with lock shield cap and removable key handle, or equal Josam or Zurn hydrant.

7. Hose faucets and sillcocks: Nibco #71 or #761 lock shield type with removable handle.

15A-19. DRAINS AND SPECIALTIES:

a. Drains and Specialties shall be Josam, Wade, or Zurn equal to the types noted:

1. Cleanout Covers: Cleanouts for concealed piping shall have polished cast nickel-bronze or stainless steel face plate to cover wall openings in finished spaces. Floor cleanouts in equipment rooms, closets, storage areas and outdoors may be without cover proveded plug is flush with finish surface.

2. Floor and area drains: Wade 8" diameter cast iron #W-1640 or equal.

15A-20. PLUMBING FIXTURES:

a. American Standard fixtures and trim as listed below, or approved equal items manufactured by Crane or Kohler shall be installed. All exposed metal trim shall be chromium plated brass. Seats shall be Church, Sperzel, or Olsonite.

1. Lavatories: Standard Plate F-321 size 19" x 17" Declyn genuine vitreous china wall type lavatory with shelf back, wall hangers and special china brackets for supporting this lavatory to the wall; fitted with C-532 centerset combination fitting with pop-up drain and end trim, 1/2" x 12" supply pipes to wall with stops and flexible tube risers, 1-1/4" P trap with cleanout plug, extensions to wall and Escutcheon. Provide one spare lavatory outfit complete.

2. Water closets: Standard Plate F-2122 New Cadet genuine vitreous china free standing close-coupled round front water closet with low tank and fitting for exposed supply; supply and stop to wall with flexible tube riser, Church #440 white seat and cover, china caps. Provide one spare water closet, complete.

b. Fixture Installation Details: Fixture mounting heights shall be in accordance with the manufacturer's standard roughing-in measurements unless otherwise noted on the drawings. Install lock nuts or pipe clamp to secure all faucets. Water closet outlets shall be sealed watertight to roughing connections with gaskets. White cement shall be installed to seal the joint between the china and the floor around all the base of all water closet bowls.

15A-21. WATER HEATERS:

a. The domestic hot water heaters shall be table top model, electric with 3000 watt, 230 volt, 60 cycle, single phase element, automatic control, glass lined 40 gallon capacity tank, drain valve and enameled steel cabinet with counter top and insulation. The heaters shall be UL approved and shall conform to NEMA standards; each shall have an ASME approved BTU rated pressure and temperature relief valve equal to Watts 4XL. The heater tanks shall be guaranteed by the manufacturer for 10 years. Heaters shall be A. O. Smith "Permaglas" PTD40, American Standard E402-DGT, or equal by Crane Company.

b. Electric wiring to water heater junction boxes is specified under the Electrical Section.

15A-22. INSULATION:

a. All hot water and all cold water piping shall be insulated, except the plated supplies exposed at the fixtures, buried cold water piping, and pipe noted "not insulated".

b. Insulation for water pipe shall be 1/2 inch thick glass fiber moulded covering with foil laminated fire retardant white Kraft paper jacket. Fittings and valve bodies in insulated piping shall have moulded glass fiber covers, or pipe covering mitered to fit snugly, or insulating cememt of the same thickness as the pipe covering . Pipe covering may be cut to enclose fittings and valve bodies provided the thickness remains not less than 75% of the pipe insulation.

c. Insulation shall extend thru sleeves where the pipe on both sides of the sleeve is insulated. Insulation shall be fitted around hanger rings and any cut-outs filled with insulating cement and the jacket finished and sealed at the rings. Ends of insulation must be neatly finished and sealed; do not cover unions. Insulation on valves and fittings and any other not covered by the white paper jacket shall have 6 oz. canvas jacket secured by and coated with Insul-coustic #102 adhesive. All joints of cold water pipe covering jackets shall be sealed with adhesive equal to Insul-coustic #102 and joint sealer strips.

d. Aluminum bands 3/4" wide x .007" thick shall be installed to secure the pipe covering; bands shall be installed at each fitting, at the ends of covering sections, and at intervals of not more than 18 inches.

e. Foil laminated white paper jacket material shall have UL approved flame spread rating not to exceed 25. Glass fiber pipe insulation shall be Armstrong, Fiberglas, Johns-Manville, or Gustin-Bacon. Plastic insulating cement shall have a K factor not greater than .87 at 200 degrees F.

15A-23. MANHOLES:

a. Sewer manholes shall be 4 ft. inside diameter, bottle shape, with concrete or brick base, brick walls laid in portland cement mortar, cast iron frame and top, cast iron steps, and U-shaped smoothly finished flow channels formed of cement mortar or concrete. Channels shall be straight or shaped in easy curves as necessary to connect the inlets to the outlets. Brick wall shall be 8 inches thick and plastered outside with mortar.

b. Cast iron frames and covers shall weigh not less than 245 pounds, with frame height not less than 6 inches, and shall be a pattern equal to Alabama Pipe Co. No. E-3906, with ventilated top not less than 23 inch diameter.

15A-24. CATCH BASINS, HEADWALLS AND PIPE SUPPORTS:

a. Catch basins, headwalls, and pipe supports shall be constructed of 3000 psi concrete; reinforcing shall be as indicated on the drawings.

b. Grates for catch basins shall have cast iron frames with inside dimensions indicated on the drawings; grates shall be cast iron with bars not less than 1 1/2 inch deep; grates and frames shall be asphalt coated.

END OF SECTION

SECTION 15 C - HEATING AND AIR CONDITIONING

15C-01. SPECIAL CONDITIONS:

a. The Contractor is referred to the General Conditions and General Requirements which are a part of the Heating and Air Conditioning specifications.

15C-02. GENERAL:

a. Furnish labor and material for the complete heating and cooling systems as shown on accompanying plans and herein described. Systems shall generally include all electric heating and cooling equipment with air distribution through a duct system.

b. The intent of these specifications is a complete and satisfactory system providing all materials and workmanship to accomplish the necessary results.

c. The contractor is to check with suppliers of equipment and make all necessary connections required by his trade to provide satisfactory functioning of all equipment.

15C-03. ORDINANCES, PERMITS AND CODES:

a. The workmanship and materials covered by these specifications shall conform to all ordinances and regulations of the city, county, state and/or other authorities having jurisdiction.

b. The contractor shall obtain all necessary permits and inspections required for the installation of his work, and pay all charges incidental thereto. He shall deliver to the Owner all certificates of said inspections issued by authorities having jurisdiction.

c. All work shall be in accordance with the requirements of the National Board of Fire Underwriters, Pamphlet 90A dated June 1960.

15C-04. WORKMANSHIP:

a. All materials and equipment shall be new and installed and completed in a first-class workmanlike manner. The Owner, Architect and/or Engineer reserves the right to direct the removal and replacement of any item which in his opinion does not present an orderly and reasonably neat or workmanlike appearance, provided such item can be properly installed by usual methods in such work.

15C-05. SPACE CONDITIONS:

a. The contractor shall introduce all apparatus, ductwork, etc., into the building at such times and in such manner as not to cause damage to the structure.

b. All equipment normally requiring service shall be easily accessible.

15C-06. DESIGN CONDITIONS:

a. Summer:

Outside design - 95 degrees F dry bulb, 76 degrees F wet bulb.

Inside design - 75 degrees F dry bulb, 50% RA.

b. Winter:

Outside design - 10 degrees F dry bulb.

Inside design - 75 degrees F dry bulb.

15C-07. GUARANTEE:

a. The Contractor shall remedy any defects due to faulty materials or workmanship and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final payment, or from the date of the owner's substantial usage or occupancy of the project, whichever is earlier.

b. The above does not include changing of filters or oiling of equipment but the base price shall include two (2) periodic inspections, one (1) to check out heating equipment, and one (1) to check out air conditioning equipment.

c. The equipment installed shall have a five (5) year warranty on the compressor.

15C-08. ELECTRICAL EQUIPMENT AND WIRING:

a. All control wiring shall be done under the electrical section of the specifications, but the controls are to be furnished by this contractor to the electrician.

b. All necessary motor branch circuit wiring from the panel to the disconnect switches, motor switches, starters, and motors will be done under the electrical section of the specifications.

c. All necessary disconnect switches installed on the line side of the starters will be furnished and installed under the electrical section of the specifications.

d. All starters, contactors, motor switches and start-stop stations shall be furnished and installed under this section of the specifications.

e. All motors, starters and motor switches shall be for the voltage and phase as required.

15C-09. DUCTWORK AND PLENUMS:

a. Ductwork of galvanized sheet metal shall be furnished and installed as required for full distribution. All ductwork shall be in accordance with the recommendations of the latest edition of the Guide of American Society of Heating and Ventilating Engineers, and sheet metal gauges, joint connections and bracing shall be as listed in NBFU Pamphlet 90A.

b. Cross break flat sides of ducts. Reduction in duct sizes shall be made with maximum 30 degree slope.

15C-10. DUCT CONNECTIONS:

a. Flexible connectors shall be installed at units. Connection between ductwork and discharge shall be at least 4 inches wide made of a flexible material.

15C-11. GRILLES AND DIFFUSERS:

a. Supply, return air, ventilating grilles, and ceiling diffusers shall be equal to the following:

1. Supply grilles - A&A #P-32.
2. Return Air grilles - U.S. # A-05.
3. Ventilating grilles - U.S. #A-05.
4. Ceiling Diffusers - Hart & Cooley #16 with #12 damper.

15C-12. FAN COIL UNIT:

a. Fan coil unit shall consist of blower package with belt drive blower adjustable for variable air volume and filter frame. Air neoprene coated glass fibre insulation for optimum thermal and acoustical performanc.

15C-13. CONDENSING UNIT:

a. Condensing unit to be mounted on ground 4" high concret pad. The condensing unit is to be used in conjunction with above quick-connect fan-coil unit.

15C-14. ELECTRIC HEAT:

a. Electric heaters are to be in three (3) stages of strip heat. Units to be of voltage and phase required and shall have built-in contactors for the three (3) stage heat. Heaters are to be U.L. approved.

15C-15. CONTROLS:

a. Controls are to consist of one (1) thermostat equal to Honeywell No. T-870 for three (3) stage heating and one (1) stage cooling with switch base.

b. Controls to be wired under another section but to be furnished under this section.

15C-16. INSULATION:

a. All ductwork is to be covered with 1" thick fiber glass insulation with 15# density. Insulation to have a vapor barrier of .002 density. All joints in insulation to be taped with approved tape and stapled every 10".

END OF SECTION

SECTION 16A - ELECTRICAL

16A-01. GENERAL REQUIREMENTS:

a. Provide all labor, materials, accessories, equipment, etc., necessary to complete and leave ready for operation the complete systems indicated on the drawings and specified herein.

b. The work shall include the complete lighting and power systems, electric space heater circuits, and the power wiring of items furnished under other sections.

16A-02. STANDARDS FOR MATERIAL AND WORKMANSHIP:

a. All materials shall be new and shall conform with the standards of Underwriters' Laboratories, Inc., in each case where such a standard has been established for the particular type of material in question. All work shall be executed in a craftsmanlike manner and shall present a neat appearance when completed.

16A-03. CODES, PERMITS AND INSPECTION:

a. The installation shall comply with The National Electrical Code and The National Electrical Safety Code.

b. The Contractor shall pay all fees and obtain all permits required by Local and State Laws, and after completion of the work shall furnish to the Owner a certification of final inspection and approval from the inspection bureau having jurisdiction.

16A-04. COMPLETENESS OF WORK:

a. The drawings and specifications shall both be considered as part of the contract. Any work shown in one and omitted in the other, or described in one and not in the other, which may fairly be implied by both or either, shall be furnished and performed as though in both.

b. All offsets, bends, fittings, wiring, pull boxes, etc., for the complete installation are not indicated on the drawings; however, it shall be the Contractor's responsibility to furnish and install all boxes, offsets, bends, devices, raceways, raceway supports, fittings, wiring, etc., required for the complete installation.

16A-05. DEVIATIONS:

a. No deviations shall be made from the plans and specifications without full knowledge and consent of the Owner. Should the contractor find at any time during the progress of the work that in his judgment, existing conditions make desirable the modifications in the requirements covering any particular item or items, he shall report such matters promptly to the Owner for his decision and instructions.

16A-06. COOPERATION:

a. The work required under this section shall be coordinated and performed in cooperation with the work required under other sections. This section requires the installation of all hangers, supports and anchors required for installation of electrical systems unless specifically indicated contrarywise herein. This section requires the cutting, chasing, excavation necessary for the installation of the systems required under this section and the repair of work damaged thereby, however, this repair work shall be performed by skilled mechanics of the trade normally used for the particular type of repair work involved.

b. The contractor shall cooperate with the Owner's personnel or the personnell of other contractors who may be installing equipment or performing other work on the job site.

16A-07. INTERFERENCES:

a. The plans are generally diagrammatic. The Contractor shall harmonize his work with the other trades on the job so that interference between electrical work, piping, duct work, equipment, and architectural details will be avoided. All offsets in raceways, fittings, pull boxes, etc., required to properly install the work shall be furnished so as to take up minimum of space and all such offsets, etc., required to accomplish this shall be furnished and installed by the Contractor at no additional expense to the Owner.

16A-08. MATERIAL LISTS AND SHOP DRAWINGS:

a. The Contractor, before purchasing apparatus and materials shall submit for approval five copies of a list of all products proposed for use in the installation. The list shall clearly show the manufacturer and catalog number of each item. Before fabrication is begun on the meter switchboards, panelboards and telephone panels five copies of shop drawings shall be submitted to the Owner for approval.

16A-09. SERVICES:

a. The electrical services will be as required. The contractor shall provide the services indicated on the drawings leaving a 5 foot length of service conductor beyond the entrance weatherhead for connection by the power supplier to the secondary buses of the transformers. The location and details of the power and telephone services shall be coordinated with the organizations supplying these services.

16A-10. EMERGENCY SYSTEMS:

a. None required.

16A-11. EQUIPMENT WIRING:

a. Electric water heaters, fan motors and controllers and associated conrol or safety devices will be furnished under other sections of the specifications. Under this section the contractor shall install all controllers and control or safety devices and provide control and power wiring for motors and electric water heaters.

16A-12. CONNECTIONS TO MOTORS AND EQUIPMENT SUBJECT TO VIBRATION:

a. The final 18 inches of conduit connecting to motors or to control devices subject to vibration or shifting shall be flexible conduit.

16A-13. GROUNDING:

a. The interior electrical systems neutrals, all raceways, and electrical equipment frames shall be completely and effectively grounded as required by the N.E.C., as shown on the drawings and as specified herein.

b. All connections made in the system ground shall be made by means of approved ground connectors.

c. Motors connected to the conduit system by a section of flexible conduit shall be grounded by means of a conductor with green insulation the same size as the power conductors feeding the motor. This conductor shall be securely attached to the frame of the motor by means of a servit post or a solderless connector inserted under a screw inserted in a hole drilled and tapped into the motor frame (attachment by means of the motor anchor bolts is not acceptable). The conductor shall be run through the flexible conduit to the nearest outlet box or fitting and there solidly attached to the raceway system.

16A-14. RACEWAYS:

a. All wiring shall be in accordance with governing codes. Electrical metalic tubing or concrete encased fibre conduit. Rigid conduit and electrical metalic tubing shall have a sheradized or galvanized coating.

b. Conduit installed underground, in slab in contact with the earth, and conduit two inch trade size and larger shall be rigid threaded except where concrete encased fibre conduit is specifically called for. Other conduits shall be electrical metallic tubing.

c. Conduit installed directly in the earth shall be protected from corrosion by one of the following methods;

1. Wrapped with Minnesota Mining & Mfg. Co. Scotch Wrap #50.
2. Painted with asphaltum paint.
3. Concrete encased.

The Architect shall be notified two days before direct buried conduit is to be covered.

d. Generally, raceways are to be concealed except in storage and service areas. Exposed raceway shall generally be parallel or perpendicular to structural members or architectural features. Horizontal runs shall be along the under side of the slab of the floor above and attached thereto vertically on columns or walls as required. Conduits shall be supported at intervals not to exceed 8'-0".

e. All rigid steel conduit joints shall be painted with white lead (on male thread only) and pulled up tight. When conduit is cut the inside edge shall be reamed smooth and all cutting residue removed. During construction all necessary precautions shall be taken to keep interior of installed conduit free from foreign materials.

f. Where conduits enter boxes, trough, equipment enclosures, etc., other than those provided with threaded hubs a standard locknut shall be used on the outside of the enclosure and a locknut and insulating bushing on the inside of the enclosure.

g. Minimum conduit size shall be 1/2 inch.

h. Fibre conduit shall be provided with sleeve joints and joints shall be tightly sealed to prevent the ingress of concrete.

16A-15. OUTLETS:

a. All outlets for lighting, power, equipment, etc., are located diagrammatically on the drawings. Reference shall be made to the architectural and mechanical plans for the exact location of all outlets. Outlets shall be located so that they will be symmetrical with architectural details and power outlets shall be located so as to properly serve the equipment.

b. The location of any outlet may be moved ten feet, before it has been installed, without additional cost to the Owner.

c. The mounting heights, indicated for wall switches, receptacles, thermostats, telephone outlets and television antenna outlets where installed in concrete block walls shall be varied as necessary so that either the top or the bottom edge of the device cover plate will align with a horizontal edge of a block.

d. Where more than one device is shown in a location they shall be gang mounted in a box of appropriate size.

e. Outlet boxes in finished areas for switches, and receptacles shall be no smaller than 4 inch square by 1-1/2 inch deep with 1/2 inch raised covers of suitable number of gangs for the particular application.

f. Junction boxes shall be sized as required by the number of conductors contained therein, but no smaller than 4 inches square by 1-1/2 inch deep.

g. Lighting fixture outlets shall be provided with suitable covers to receive fixture to be installed thereon.

h. Outlet and device boxes shall be galvanized steel.

i. Mounting heights indicated for outlets are from finished floor to center of outlet.

16A-16. CONDUCTORS:

a. Furnish, install and connect all conductors indicated on the drawings, specified herein or otherwise required for the work. All conductors shall be copper, shall conform to ASTM Specifications as to conductivity and shall be free from kinks and defects when installed.

b. Conductore #8 and larger shall be stranded.

c. Conductors #14 thru #8 shall be type TW, #6 and larger shall be Type THW.

d. Splices and taps in conductors sizes #14 thru #10 are to be made with crimp on connectors and insulated with plastic caps or plastic tape equal to Minnesota Mining and Mfg. Co. #33 Scotch tape. Splices and taps in sizes #8 thru #2/0 are to be made with "split bolt" connectors and sizes larger than 2/0 are to be made with Burndy "Hilugs" or "Hilinks". Splices and taps in conductor #8 and larger shall be insulated with Okonite rubber tape covered with Okonite Manson tape.

e. All wiring shown on the drawings or required on manufacturers diagram for proper operation of equipment furnished under this or other sections shall be provided under this section.

16A-17. METER SWITCHBOARDS:

a. The meter switchboards shall be complete self contained free standing cubicle units with devices located on one side of the cubicle units only. The switchboards shall be comprised of a main overcurrent and disconnecting means, complete bussing from the line side of the main disconnects to the various feeder terminals, meter sockets for feeders as scheduled, watthour meters for each meter socket and feeder circuit breakers, all installed in fabricated steel cubicles and joined to form coordinated units. Meter switchboards shall be Single phase three wire. Individual meter switchboards shall have ratings and components as scheduled on the drawings.

b. The main overcurrent and disconnecting means shall be a molded case circuit breaker or fused service protector for 1000 ampere size and smaller and a fused service protector or fused bolted pressure contact switch for larger than 1000 ampere sizes. Fuses shall be the high interrupting capacity current limiting type. Molded case circuit breakers shall be type KM or MN and Service Protectors shall be type MN or K - Line all manufactured by the I.T.E. Circuit Breaker Company. Bolted pressure contact switches shall be manufactured by the Pringle Electrical Manufacturing Company.

c. Buses shall be of silver plated copper bar except that the tap from the meter socket to the line terminals of the feedersbreaker may be cable. The busses in the main cubicle and the cross bussing shall be rated equal to or larger than the main overcurrent device except that the neutral bus shall be one half the rating of the main busses.

d. Meter sockets shall be provided as required and designed to receive the meter installed. Meter sockets shall be provided with a method of sealing the meters or the blank socket covers in place.

e. Meters shall be single element type for operation on single phase 120/240 volt three wire service. Meters rated 15 amperes shall be class 100 suitable for metering loads up to 100 amperes and shall be General Electric Company's type I-55-S. Meters rated 30 amperes shall be class 200 suitable for metering loads up to 200 amperes and shall be General Electric Company's type I-60-S.

f. Feeder breakers shall be two pole molded case with thermal magnetic trip elements. Type EQ manufactured by the I.T.E. Circuit Breaker Company. Each feeder breaker shall be provided with a laminated plastic name plate with the designation of the panel fed through the breaker engraved thereon. The name plate shall be approximately 1 inch by 2-1/2 inches with letters 1/4 inch (minimum) tall and shall be riveted to the face of the meter switchboard.

g. The meter switchboards shall be enclosed in steel frame enclosures covered with steel plates no larger than No. 12 U. S. gauge. Separate compartments shall be provided for metered and unmetered wiring and access panels and removable plates to the unmetered portions shall be sealable.

h. The meter switchboards shall be the Uni-Power type as manufactured by the I.T.E. Circuit Breaker Company.

16A-18. PANELBOARDS:

a. Panelboards shall be I.T.E. Circuit Breaker Company Type EQ Loadcenter of sizes scheduled and in locations indicated on the drawing.

b. Directory cards shall be filled in using a typewriter indicating loads served by each breaker.

c. The tops of panelboards located in apartment units shall be 5'-0" above the floor, the tops of other panelboards shall be 6'-0" above the floor.

16A-19. SAFETY SWITCHES:

a. Safety switches rated as indicated on the drawings shall meet or exceed N.E.M.A. requirements for Type "Heavy Duty". Cartridge fuses shall be provided in each fuse gap rated as indicated on the drawings.

16A-20. CONTACTORS:

a. Contactors shall be the magnetic type designed especially for use on lighting circuits; rated 60 amperes, 2 pole and mounted in a General Purpose N.E.M.A. I enclosure. Contactors shall be General Electric Co.'s Form CR 160.

16A-21. WIRING DEVICES:

a. Wiring devices shall be Harvey Hubbell Inc., catalog numbers as tabulated below:

Duplex receptacle, 2 pole, 2 wire, 15A, 125V	No. 9595-I
Duplex receptacle, 2 pole, 2 wire, 15A, 125V with isolated "hot" terminals and common neutral.	No. 9571-I
Duplex receptacle, 2 pole, 3 wire, 15A, 125V (grounding type)	No. 5242-I
Single receptacle, 2 pole, 3 wire, 15A, 250V (grounding type)	No. 5651
Single receptacel, 3 pole, 3 wire, 50A, 250V	No. 7962
Single pole switch, 15A, 277V	No. 1201-I
Three way switch, 15A, 277V	No. 1203-I

16A-22. COVER PLATES:

a. Cover plates for switches, receptacles, telephone outlets, etc., shall be stainless steel, or oversized aluminum.

16A-23. PHOTO ELECTRIC CELL UNIT:

a. None Required.

16A-24. LIGHTING FIXTURES:

a. Provide all lighting fixtures. The type required is indicated on the drawings.

16A-25. LAMPS:

a. Provide lamps in all fixtures. See drawings for wattage and type.

16A-26. BACK-UP BOARDS:

a. Where back-up boards are called for on the drawings the contractor shall install a panel of five ply, 3/4 inch thick soft wood face plywood with one side finished. Panel shall be securely attached to the wall.

16A-27. TELEPHONE SYSTEMS:

a. Telephone systems shall be provided as indicated on the drawings consisting of: Service raceway with entrance weatherhead, panel, branch circuits and outlet boxes with one hole telephone type cover plates. In each telephone raceway shall be installed a #14 galvanized fish wire. Telephone raceways shall be installed with no more than the equivalent of three 90 degree bends.

b. Telephone panels shall be provided formed from galvanized code gauge steel with a 3/4 inch thick soft plywood back board. Panels shall be the size and type indicated on the drawings with hinged doors with a flush latch and lock.

16A-28. MARKING:

a. The Contractor shall identify each surface mounted panelboard, contractor and safety switch, neatly stenciling its name or use thereon. The stencil shall be black or white with a finishing coat of clear spar varnish. Laminated Plastic name tags may be riveted to cabinets and covers in lieu of painted titles.

16A-29. PAINTING:

a. Troughs, metal frames, support racks and wooden surfaces required under this section shall be painted as required in the PAINTING section. Paint shall be applied to back-up boards before switches, throughs, devices, etc., are installed.

16A-30. CONDUIT IN STRUCTURAL CONCRETE:

a. Except where conduits turn up out of floor slabs to apartment electrical panels, conduits installed in or passing through floor slabs or other structural members shall be clean and spaced no closer than three diameters, center to center. Conduits crossing reinforcing bars shall do so at angles greater than 30 degrees. Conduits installed parallel to reinforcing bars shall be no closer to the bars than 1-1/2 inches.

16A-31. BACKFILLING:

a. Backfilling of trenches required under this section shall be as specified under the EARTHWORK section, except that the backfill of trenches located under footings shall be with 2,000 psi concrete.

16A-32. TESTS:

a. A full scale working test, with all lights, equipment, machinery and appliances in operation shall be made, and electrical systems proven satisfactory for operation and free from defects. Any defects that occur in materials and/or labor incorporated in the work under this section of the specifications within a period of one year from date of acceptance shall be corrected at the Contractor's expense. All certificates or letters of warranty or guarantee shall be given to the architect for the owner at the completion of the work.

END OF SECTION

16B TELEPHONE AND INTERCOM SYSTEM

Not in Contract.

END OF SECTION

16C ALARM SYSTEM

Not in Contract.

END OF SECTION